

DTIC FILE COPY

GL-TR-89-0296

(2)

**Radio Frequency Interference (RFI)
Measurements made Near the Proposed
Alaska OTH Receiving Site**

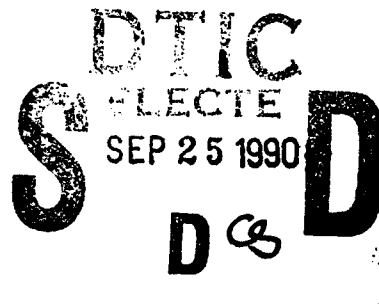
AD-A226 922

**Steven A. Estes
DuWayne Bostow
Robert D. Hunsucker**

**University of Alaska Fairbanks
Geophysical Institute
Fairbanks, AK 99775-0800**

July 1990

Scientific Report No. 1



Approved for public release; distribution unlimited

**GEOPHYSICS LABORATORY
AIR FORCE SYSTEM COMMAND
UNITED STATES AIR FORCE
HANSCOM AIR FORCE BASE, MASSACHUSETTS 01731-5000**

90 09 24 016

"This technical report has been reviewed and is approved for publication"

B. S. Dandekar
BALKRISHNA S. DANDEKAR
Contract Manager

William K. Vickery
WILLIAM K. VICKERY
Branch Chief

FOR THE COMMANDER

Robert A. Skrivanek
ROBERT A. SKRIVANEK
Division Director

This report has been reviewed by the ESD Public Affairs Office (PA) and is releasable to the National Technical Information Service (NTIS).

Qualified requestors may obtain additional copies from Defense Technical Information Center. All others should apply to the National Technical Information Service.

If your address has changed, or if you wish to be removed from the mailing list, or if the addressee is no longer employed by your organization, please notify GL/IMA, Hanscom AFB, MA 01731. This will assist us in maintaining a current mailing list.

Do not return copies of this report unless contractual obligations or notice on a specific document requires that it be returned.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

| | | | | |
|---|---|--|--|--|
| 1. AGENCY USE ONLY (Leave blank) | | 2. REPORT DATE July 1990 | 3. REPORT TYPE AND DATES COVERED Scientific Report No. 1 | |
| 4. TITLE AND SUBTITLE Radio Frequency Interference (RFI) Measurements made Near the Proposed Alaska OTH Receiving Site | | | 5. FUNDING NUMBERS PR 4140 TA ES WU AB Contract F19628-87-K-0048 | |
| 6. AUTHOR(S) Steven A. Estes DuWayne Bostow Robert D. Hunsucker | | | | |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of Alaska Fairbanks Geophysical Institute Fairbanks, AK 99775-0800 | | | 8. PERFORMING ORGANIZATION REPORT NUMBER | |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Geophysics Laboratory Hanscom AFB Massachusetts 01731-5000 Contract Manager: B. Dandekar/LIS | | | 10. SPONSORING/MONITORING AGENCY REPORT NUMBER GL-TR-89-0296 | |
| 11. SUPPLEMENTARY NOTES | | | | |
| 12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; Distribution unlimited. | | | 12b. DISTRIBUTION CODE | |
| 13. ABSTRACT (Maximum 200 words) This report describes in detail measurments of RFI and radio noise made in the vicinity of the proposed OTH receiver sites near TOK, Alaska during the period 23 September to 9 October 1987. | | | | |
| 14. SUBJECT TERMS Tok, Alaska OTH Radio Frequency Interference (RFI) Radio Noise | | | 15. NUMBER OF PAGES 68 | |
| | | | 16. PRICE CODE | |
| 17. SECURITY CLASSIFICATION OF REPORT Unclassified | 18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified | 19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified | 20. LIMITATION OF ABSTRACT SAR | |

TABLE OF CONTENTS

| | | |
|-------|---|----|
| I. | Introduction | 1 |
| II. | System Testing and Calibration | 3 |
| | Calibration Setup | 3 |
| | Description of Equipment | 3 |
| | Procedure | 6 |
| | System Sensitivity | 7 |
| | Time Standard | 11 |
| III. | Results of Measurements | 12 |
| | Atmospheric Noise | 12 |
| IV. | Ambient Noise Measurements | 20 |
| | Local "TOK" Noises | 20 |
| V. | Discussion and Conclusions | 23 |
| VI. | Acknowledgements | 26 |
| VII. | References | 27 |
| VIII. | Appendix A: Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987 | 47 |
| IX. | Appendix B: Ambient Noise Measurements Near Tok, Alaska September - October 1987 | 60 |

**RADIO FREQUENCY INTERFERENCE (RFI) MEASUREMENTS MADE NEAR
THE PROPOSED ALASKA OTH RECEIVING SITE**

Steven A. Estes, DuWayne Bostow and Robert Hunsucker
Geophysical Institute, University of Alaska
Fairbanks, AK 99775-0800

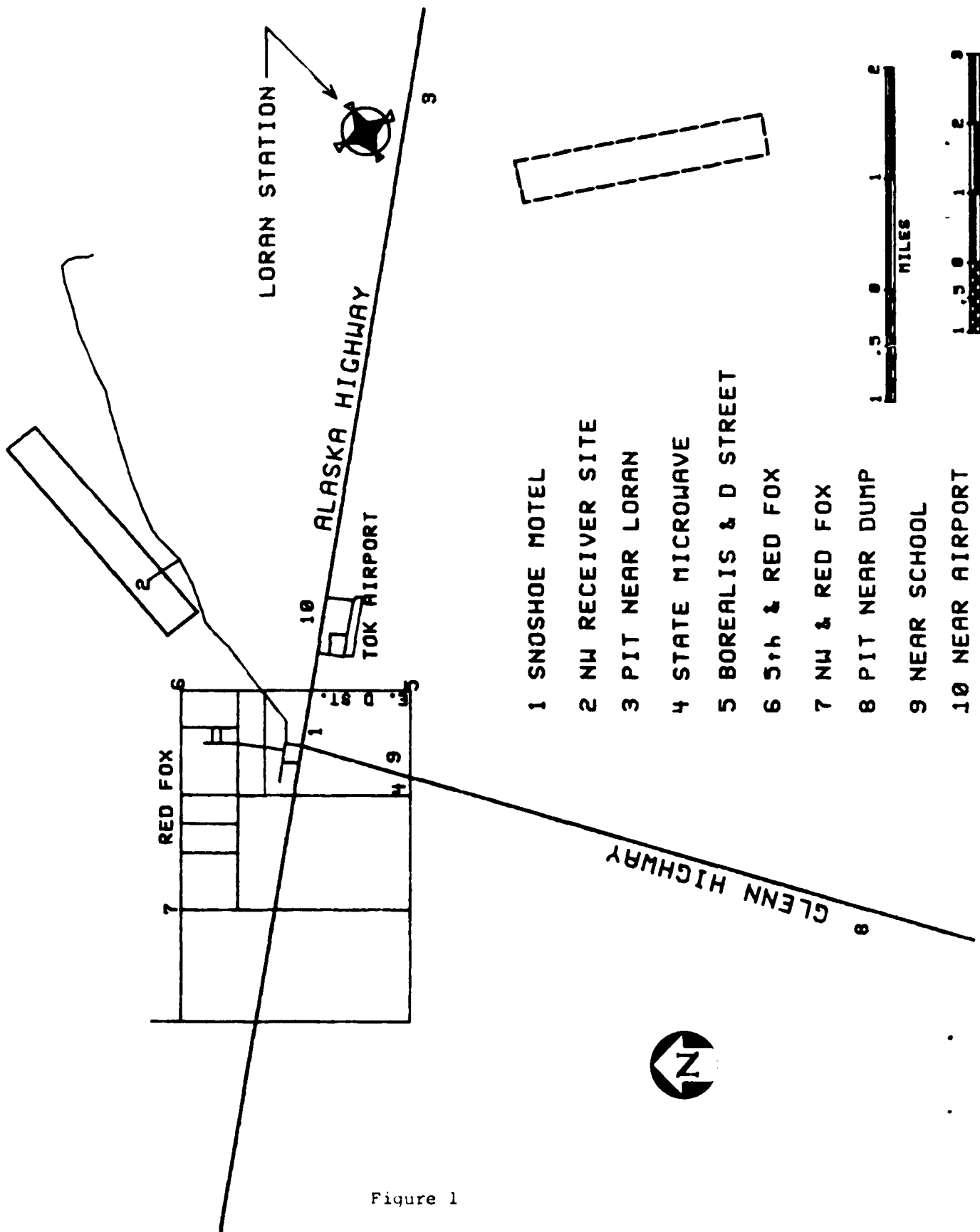
INTRODUCTION

As part of our AFGL Contract on "Auroral Clutter and Radio Frequency Interference Studies in Alaska", we were requested to make field measurements of RFI and atmospheric radio noise in the vicinity of the proposed Alaska OTH Radar site near Tok, Alaska as described by "Task 2" in our proposal.

Extensive measurements of RFI and radio noise were made during the period 23 September - 9 October 1987 in the vicinity of the planned OTH radar site. Figure 1 shows the location of the proposed OTH receiver antenna systems and the 10 sites where measurements were made in relation to the "Greater Tok Metropolitan Area".



| | |
|--------------------|-------------------------|
| Accession For | |
| NTIS | CRAWI |
| DTIC | TAB |
| Unannounced | |
| Justification | |
| By | |
| Distribution | |
| Availability Codes | |
| Dist | Availability Special |
| A-1 | |



System Testing and Calibration

CALIBRATION SETUP

The test location was at the proposed northwest OTH-B receiver site (63 21.5'N, 142 55.5'W), about two miles north of the Tok, Alaska airport. The NM17/27A field intensity meter was set up in a travel trailer. The calibrated NM17/27A 41" rod antenna with four 100' radials was located about 150' to the northeast and connected to an antenna switch at the trailer with RG58/U coaxial cable. The 20' monopole with four 100' radials was located 60' to the southwest. It was connected to the antenna switch with 83'3" of Belden 8240, RG58/U coaxial cable. Between the antenna switch and the NM17/27A were a 2 MHz high pass filter and a 42 MHz low pass filter. A pickup truck with a Kenwood TS-440S transceiver used as a signal source fed into a 54" vertical mast mounted on the cab was parked about 500 feet to the southeast.

DESCRIPTION OF EQUIPMENT

As shown in figure 2. The primary instrument used for data acquisition was the Eaton/Singer/Ailtech NM17/27A EMI/Field Intensity Meter, and the associated calibrated antenna system. The NM17/27A performs EMI emission measurements from 10 kHz to 32 MHz in accordance with MIL-STD-461A. It supplies amplitude and frequency analog data output for X-Y recorder presentation. It also provides the average, quasi-peak, and direct peak field intensity, with several hold

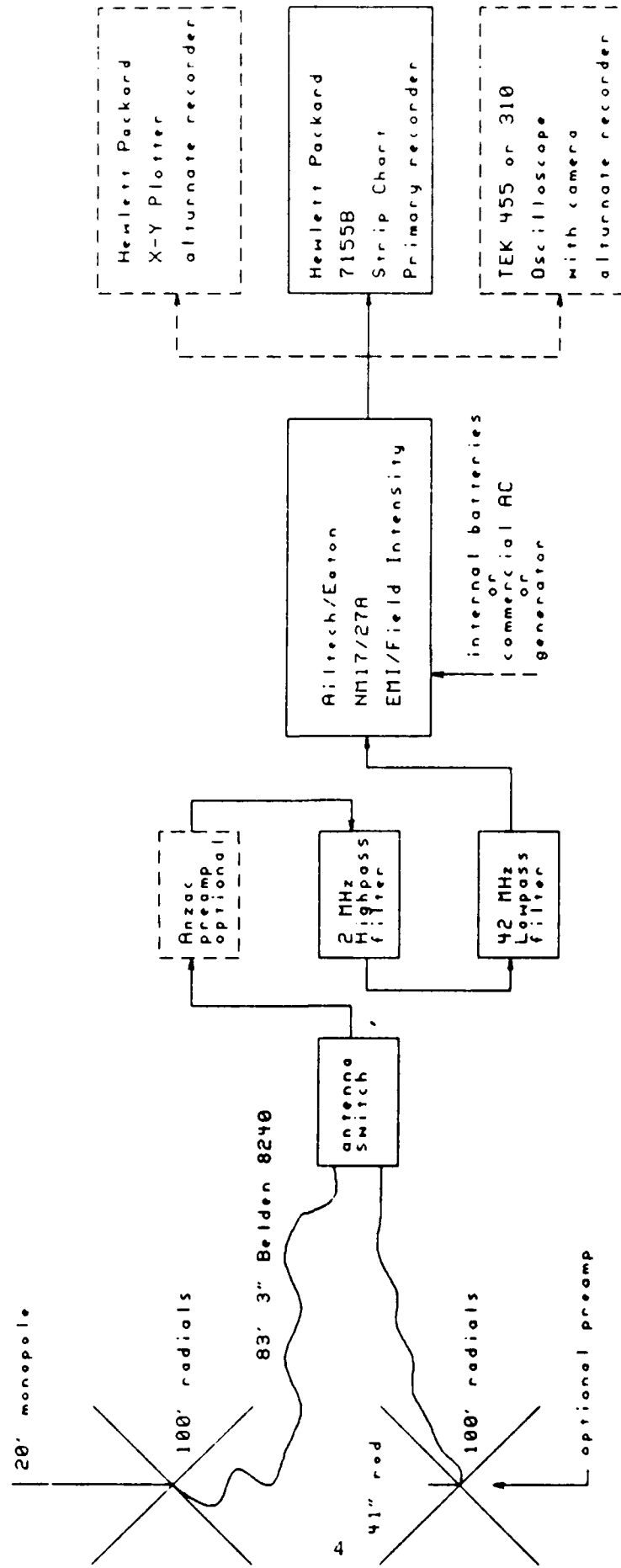


Figure 2. Simplified block diagram of measurement Setup.

times and a slideback detector (for aural null indication) functions. Four bandwidths (100 Hz, 1 kHz, 10 kHz and 50 kHz) are available with internal frequency scan, variable sector width and scan rate. Excellent sensitivity, VSWR, gain flatness and spurious rejection assure accurate and dependable test results. The 60dB meter scale, along with 100dB of attenuation/gain in 20dB steps, provides an overall measurement range of 160dB (0.01 microvolt to 1.0 volt). The system operates from 115/230 VAC or from an internal rechargeable battery.

Most of the data were recorded on a battery powered Hewlett Packard 7155B strip chart recorder. When AC power was available, a Hewlett Packard X-Y recorder was often used as the recorder. TEK 455 and TEK 314 oscilloscopes and an associated camera were available and tried but produced poor results when compared to the strip chart and X-Y recorders. To increase sensitivity of the system a 20 foot tall monopole antenna was constructed and calibrated against the standard 41" rod antenna provided with the NM 17/27A.

The monopole antenna was constructed from two ten foot pieces of 3/4 inch copper pipe joined in the center by a union fitting. This allowed disassembly for easy transport. The union fitting also supports a large washer to which three guy ropes are fixed. The base is a floor flange mounted on a block of phenolic and that is attached to a

24"x24" piece of plywood. The 20' mast screws into the floor flange. An aluminum ring is attached to a 12"x19" plate of aluminum which is screwed to the plywood base to which the four 100' radial wires are fastened. A female BNC connector is mounted on the ring and the center conductor wired to the mast by means of a spade lug and a screw.

Out of band signals were rejected by filtering the input thru a 2 MHz highpass and a 42 MHz lowpass filter

PROCEDURE

To determine the antenna correction factor (A_{cf}) for the 20' monopole continuous wave (CW) signal of about three watts was transmitted from the Kenwood transceiver on 12 different frequencies as listed in Table 1. Signal levels measured alternately on the 41" rod antenna and the 20' monopole are listed as measured levels in Table 1. The antenna correction factor (A_{cf}) for the 41" rod antenna is obtained from the calibration chart provided with the NM17/27A. The A_{cf} is added to the measured level for the 41" rod antenna to obtain the corrected signal level. The A_{cf} for the monopole is obtained by subtracting the measured level on the 20' monopole from the corrected level for the 41" rod. The results are listed in Table 1.

Table 1

| Test Freq | Measured Level | A_{cf} | Corrected Level | Measured Level | Monopole A_{cf} |
|-----------|----------------|----------|-----------------|------------------|-------------------|
| (MHz) | (dBm) | 41" rod | (dBm) | < 20' monopole > | (dB) |
| 1 | 2.0 | -104.0 | 33.0 | - 98.0 | 27.0 |
| 2 | 2.8 | - 82.5 | 32.0 | - 73.5 | 23.0 |
| 3 | 4.0 | - 85.5 | 32.0 | - 66.5 | 13.0 |
| 4 | 6.0 | - 82.5 | 32.2 | - 58.5 | 8.2 |
| 5 | 8.0 | - 78.5 | 33.2 | - 49.0 | 3.7 |
| 6 | 10.0 | - 67.0 | 24.0 | - 42.5 | - 0.5 |
| 7 | 12.0 | - 68.0 | 23.5 | - 38.0 | - 6.5 |
| 8 | 14.0 | - 67.0 | 24.0 | - 39.0 | - 4.0 |
| 9 | 16.0 | - 68.0 | 24.8 | - 41.0 | - 2.2 |
| 10 | 20.0 | - 66.0 | 26.8 | - 37.0 | - 2.2 |
| 11 | 24.0 | - 64.0 | 27.5 | - 35.0 | - 1.5 |
| 12 | 28.0 | - 60.0 | 28.0 | - 33.5 | 1.5 |

SYSTEM SENSITIVITY

The specifications of the NM17/27A give a sensitivity of -16dB(uV) to produce a 3dB meter indication above noise when used as a two-terminal RF voltmeter at 10 kHz bandwidth in the field intensity mode. The antenna system response, including any preamplifier, must be considered in calculating the system sensitivity. Antenna cable losses are negligible in this case. Four cases that were utilized during the course of this study must be considered: 1) 41" rod, 2) 41" rod with NM17/27A preamplifier, 3) 20' monopole and 4) the 20' monopole with an Anzac AM-124 preamplifier.

In the first case, for the 41" rod, the system sensitivity is just the A_{cf} (antenna correction factor) as a function of frequency plus the NM17/27A sensitivity.

The second case is again for the 41" rod but this time with the rod antenna preamp. The system sensitivity for the frequency range of interest (2-28 MHz) is obtained from the NM 17/27A instruction manual (figure 2-1) as -3dB(uV/m) for 1kHz bandwidth. The sensitivity for a 10kHz bandwidth will be 10dB less or +7dB(uV/m).

The third case, for the 20' monopole used directly with the NM17/27A, is similar to the first case. It is the monopole A_{cf} plus the sensitivity of the NM17/27A.

The fourth case, the 20' monopole with the Anzac preamplifier is somewhat more complicated. The Anzac is specified as having a NF (noise figure) of 3.5dB. This, when combined with the NF of the NM17/27A and the A_{cf} yields the system sensitivity.

The sensitivity of the NM17/27A ,from above, is -16dBuV (-123dBm) at 10kHz bandwidth. Therefore, the noise power (P_n) of the NM17/27A, referenced to the input terminal is:

$$P_n = kT_0B(F-1) \text{ where}$$

k = Boltzmann's constant,

T_0 = absolute temperature,

B = bandwidth,

F = noise factor.

$$P_n(\text{dB}) = 10 \log P_n = 10 \log(kT_0) + 10 \log(B) + 10 \log(F-1) \quad (1)$$

$$-123\text{dBm} = -174\text{dBm/Hz} + 10 \log(10\text{kHz}) + 10 \log(F-1)$$

$$-123\text{dBm} = -174\text{dBm/Hz} + 40\text{dBHz} + 10 \log(F-1)$$

$$-123\text{dBm} + 174\text{dBm/Hz} - 40\text{dBHz} = 10 \log(F-1)$$

$$11\text{dBm} = 10 \log(F-1)$$

$$\log(F-1) = 1.1$$

$$(F-1) = 12.6$$

solving for the noise factor: $F = 13.6$

The Anzac preamp characteristics are $NF = 3.5\text{dB}$ and $G = 14\text{dB}$. Therefore $F = 2.2$ and $G = 25.12$.

The combined noise factor F' is given as:

$$F' = F_{\text{preamp}} + (F_{\text{NM}} - 1)/G_{\text{preamp}} = 2.2 + 12.6/25.12 = 2.70 \quad (2)$$

and finally the noise power for the combination:

$$P_n' = kT_0 B (F-1)$$

$$10 \log P_n' = 10 \log(kT_0) + 10 \log B + 10 \log (F'-1) \quad (3)$$

$$P_n'(\text{dB}) = -174\text{dBm/Hz} + 10 \log 10\text{kHz} + 10 \log (2.7-1)$$

$$P_n'(\text{dB}) = -174\text{dBm/Hz} + 40\text{dBHz} + 2.3\text{dB} = -131.7\text{dBm}$$

$$P_n'(\text{dB}) \sim -132\text{dBm} = -25\text{dBuV for } 10\text{kHz bandwidth}$$

This must be added to the A_{cf} to obtain the system sensitivity.

Sensitivities for the four cases are summarized below:

Table 2

| Freq (MHz) | SYSTEM SENSITIVITY* (rounded to nearest dB) | | | |
|---------------|---|--------------|----------------------------------|----------------------------------|
| | 41"rod | 41" w/preamp | 20'pole | 20'w/preamp |
| | (dBuV/m) Sens+A _{cf} | (dBuV/m) | (dBuV/m) Sens+A _{cf} | (dBuV/m) Sens+A _{cf} |
| 2.5 | -16+32=16 | 7 | -16+25= 9 | -25+25= 0 |
| 5 | -16+32=16 | 7 | -16+11= -5 | -25+11=-14 |
| 10 | -16+24= 8 | 7 | -16- 1=-17 | -25- 1=-26 |
| 15 | -16+24= 8 | 7 | -16- 3=-19 | -25- 3=-28 |
| 20 | -16+26=10 | 7 | -16- 2=-18 | -25- 2=-27 |

* Field intensity mode, B = 10 kHz.

The system sensitivity is plotted in figures 3 thru 7. They are the horizontal lines which usually continue for several days representing the time period each configuration was used. These calculated sensitivities do not compare well with the measured noise levels. The absolute minimum noise levels should plot no more than 3dB below the system sensitivity. However, as seen in figures 3 thru 7 measured values are as much as 9.5dB below the calculated values.

Sources of this error could be from calibration error, which has been observed by others in the field. The input sensitivity of the NM17/27A was checked with an IFR 1000S communications test set and no error was found. But characteristics of neither the NM17/27a 41" whip antenna nor its preamplifier were measured. The manufacturer states that "All above sensitivities are conservatively stated, worst case over the entire frequency range of the instrument. Typical average sensitivity is 2 to 4 dB better"

TIME STANDARD

All data was recorded using ADT (Alaska Daylight Time). ADT is eight hours earlier than UTC (Universal Coordinated Time). However, Tok, Alaska lies at approximately 143°W longitude. At 15 degrees/hr, Tok time should be nine and a half hours earlier than UTC - not eight hours as implied by ADT.

Results of Measurement

ATMOSPHERIC NOISE

One of the objectives of this project was to measure the level of atmospheric noise at and near the OTH site in the 2-30 MHz frequency band. Below are tables derived from CCIR 322 and NTIA-R-85-173 for expected values of atmospheric noise for Autumn (Sept-Nov) near Tok, Alaska. These values are converted to dB above 1 microvolt (dBuV/m) and are plotted against local time as the cyclical functions in Figures 3 thru 7.

Table 3

Expected Values of Atmospheric Noise
for Autumn (Sep-Nov) near Tok, Alaska
from CCIR report 322

| local time/freq | 2.5 | 5 | 10 | 15 | 20MHz |
|--------------------|---------------------|----|----|----|-------|
| | (dB above kT_0B) | | | | |
| 00-04 | 48 | 45 | 30 | 10 | - |
| 04-08 | 34 | 34 | 23 | 9 | - |
| 08-12 | 15 | 21 | 28 | 24 | 11 |
| 12-16 | 17 | 21 | 30 | 28 | 21 |
| 16-20 | 40 | 38 | 33 | 25 | 15 |
| 20-24 | 50 | 45 | 34 | 18 | - |
| Galactic | 43 | 36 | 28 | 25 | 22 |

Converting to electric field intensity in decibels
above one microvolt per meter by:

$$E_n = F_a + 20 \log f + 10 \log B - 95.5 \quad -- (4)$$

where E_n is electric field noise strength
 F_a is noise level in dB above kT_0B
 f is frequency in MHz
 B is bandwidth in Hz

Applying the equation (4) for 10 kHz bandwidth to the
Table 3 above:

Table 4

Expected Values of Atmospheric Noise
for Autumn (Sep-Nov) near Tok, Alaska
computed from CCIR report 322

| local time/freq | 2.5 | 5 | 10 | 15 | 20MHz |
|--------------------|------------------------------|-------|-------|-----|-------|
| | (dB above 1 microvolt/meter) | | | | |
| 00-04 | 0 | 3.5 | - 5.5 | -22 | - |
| 04-08 | -14 | - 7.5 | -12.5 | -23 | - |
| 08-12 | -33 | -20.5 | - 7.5 | - 8 | -18.5 |
| 12-16 | -31 | -20.5 | - 5.5 | - 4 | - 8.5 |
| 16-20 | - 8 | - 3.5 | - 2.5 | - 7 | -14.5 |
| 20-24 | 2 | 3.5 | - 1.5 | -14 | - |
| Galactic | - 5 | - 5.5 | - 7.5 | - 7 | - 7.5 |

Similarly for the NTIA data in Table 5 :

Table 5

Expected Values of Atmospheric Noise
for Autumn (Sep-Nov) near Tok, Alaska
from NTIA report 85-173

| local time/freq | 2.5 | 5 | 10 | 15 | 20MHz |
|--------------------|---------------------|----|----|----|-------|
| | (dB above kT_0b) | | | | |
| 00-04 | 40 | 38 | 22 | - | - |
| 04-08 | 33 | 33 | 22 | - | - |
| 08-12 | 11 | 19 | 27 | 22 | 9 |
| 12-16 | 12 | 18 | 28 | 27 | 16 |
| 16-20 | 36 | 36 | 30 | 22 | 12 |
| 20-24 | 40 | 38 | 28 | 10 | - |
| Galactic | 43 | 36 | 28 | 25 | 22 |

Converting to electric field intensity in decibels above one
microvolt per meter by applying the equation (4) for 10 kHz
bandwidth to the Table 5 above:

Table 6

Expected Values of Atmospheric Noise
for Autumn (Sep-Nov) near Tok, Alaska
computed from NTIA report 85-173

| local time/freq | 2.5 | 5 | 10 | 15 | 20MHz |
|--------------------|------------------------------|-------|-------|-----|-------|
| | (dB above 1 microvolt/meter) | | | | |
| 00-04 | - 8 | - 3.5 | -13.5 | - | - |
| 04-08 | -15 | - 8.5 | -13.5 | - | - |
| 08-12 | -37 | -22.5 | - 8.5 | -10 | -20.5 |
| 12-16 | -35 | -23.5 | - 7.5 | - 5 | -13.5 |
| 16-20 | -12 | - 5.5 | - 5.5 | -10 | -17.5 |
| 20-24 | - 8 | - 3.5 | - 7.5 | -22 | - |
| Galactic | - 5 | - 5.5 | - 7.5 | - 7 | - 7.5 |

A tabulation of all RF noise measurements made at the TOK
OTH site is included as Appendix A to this report.

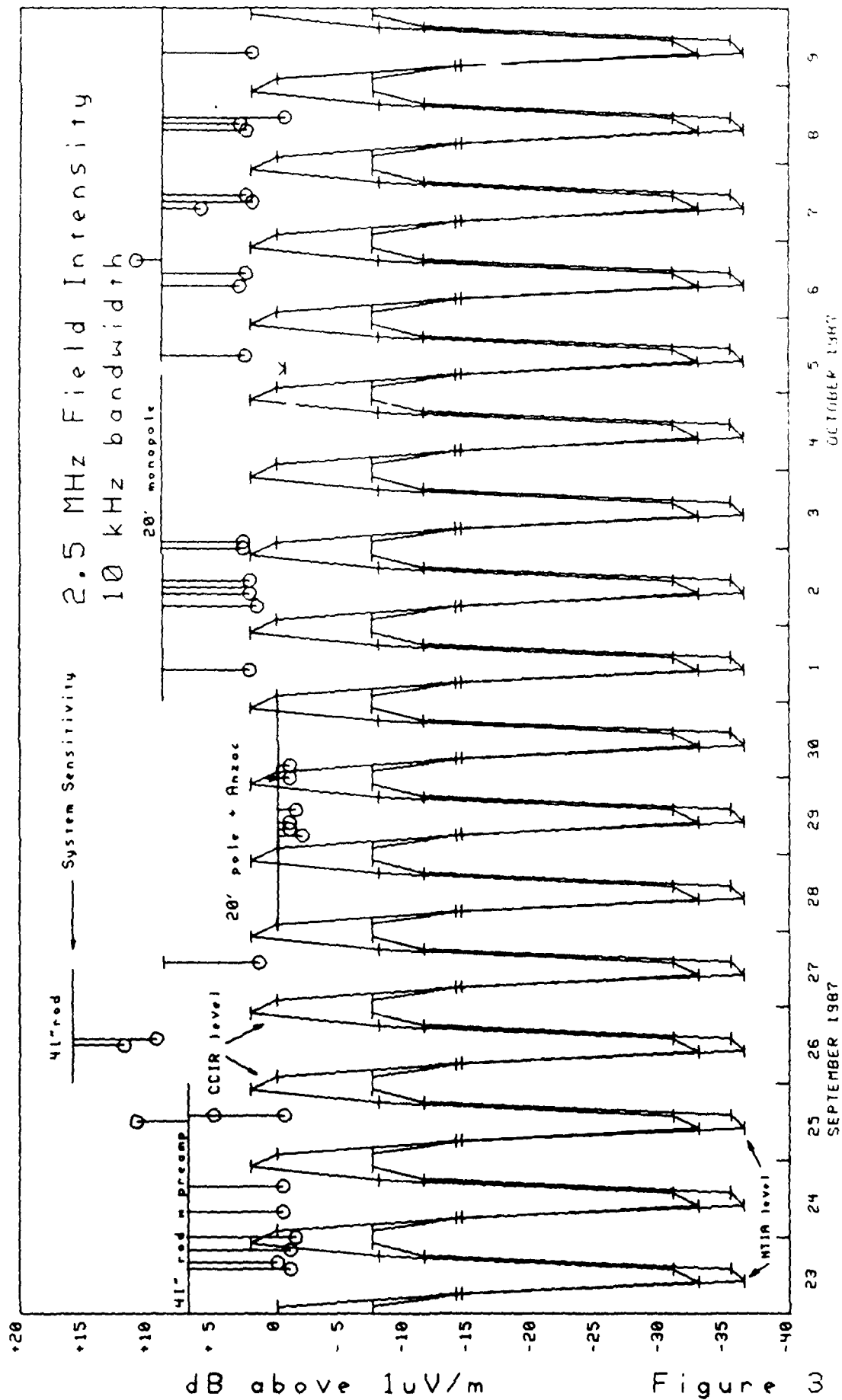


Figure 10

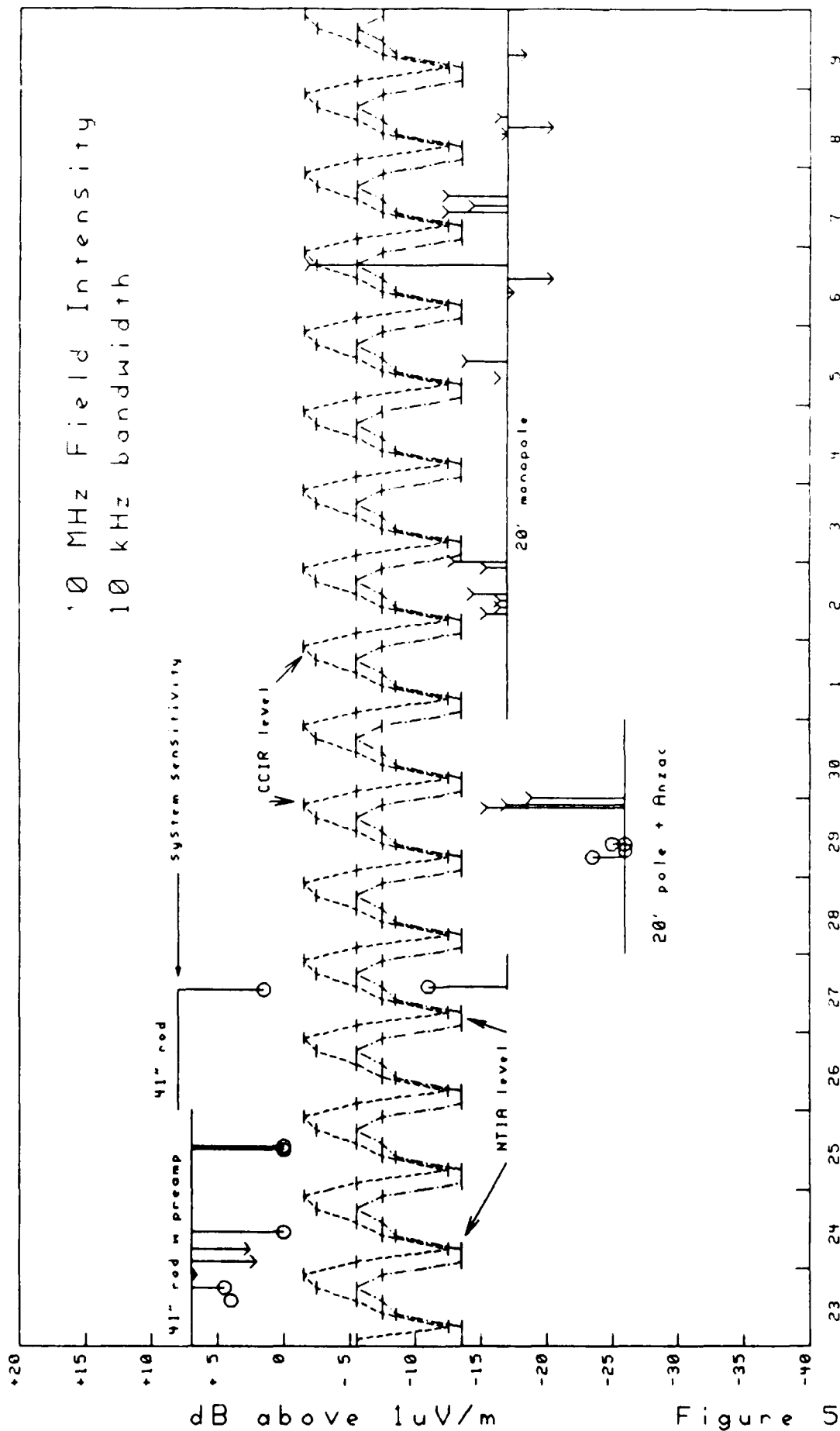
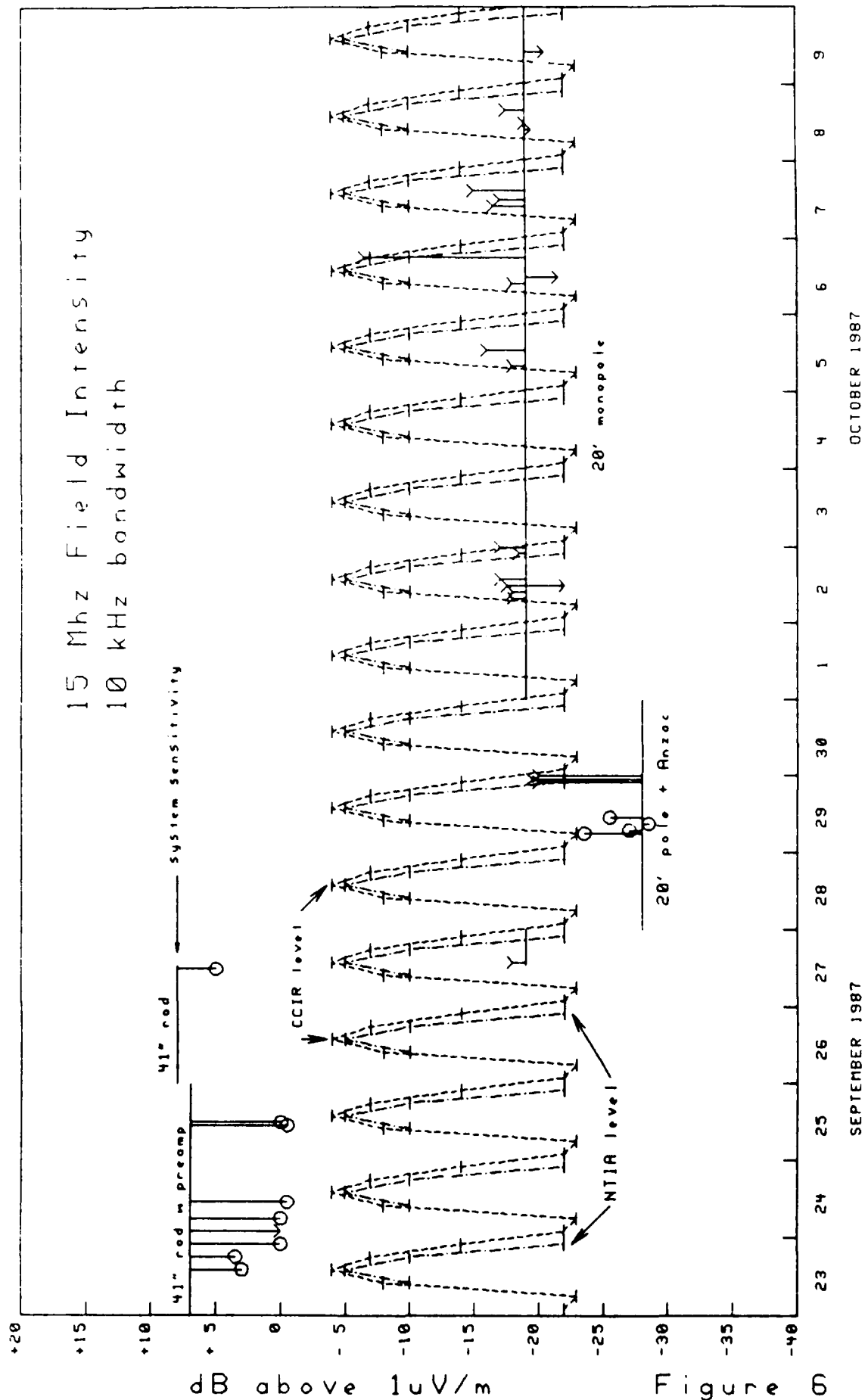
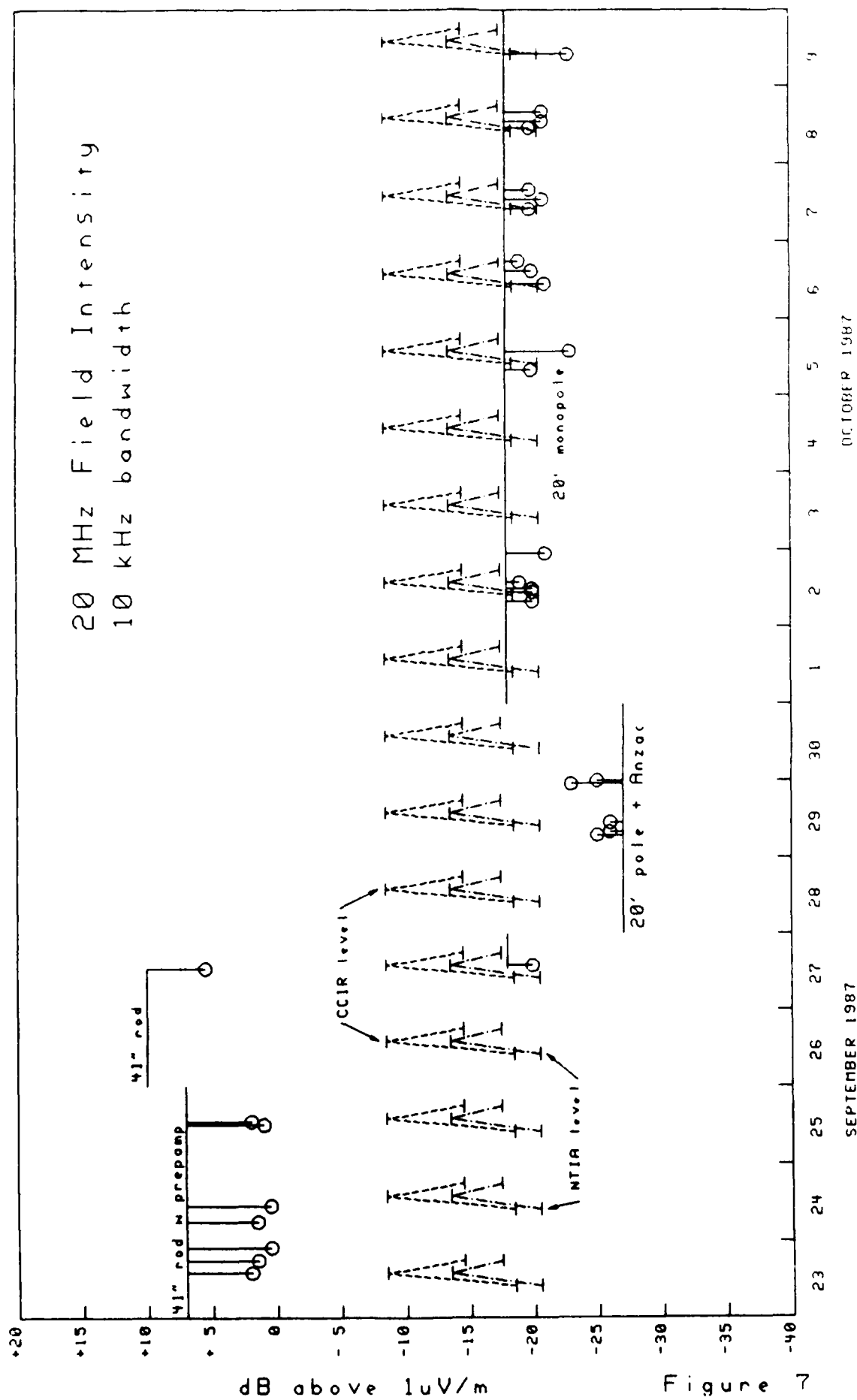


Figure 5





Ambient Noise Measurements

A tabulation of all measurements of ambient noise, corrected for antenna response, is included as Appendix B, and they are plotted as a function of frequency, intensity and time in Figures 3 thru 7 as circles and down-ward pointing arrows. The circles represent the scaled readings free of interference from transmissions from communication, radar and navigation systems and the like. Data possibly contaminated by interference are represented as arrows; meaning that the value of atmospheric or locally generated noise is probably less than the value plotted. The vertical lines extending from the symbols allows the data to be referred to the system calculated sensitivity. Recall that the calculated system sensitivity is defined as three decibels above calculated system noise. For comparison, the short horizontal lines connected by the cyclical functions, are the expected values of atmospheric noise from Tables 4 and 6. At any specific time the CCIR values are always larger than the NTIA values.

Local "TOK" Noises

The raw spectral data obtained from the NM17/27A and Hewlett Packard chart recorders were not easily comparable due to fluctuations in sweep speed, differences in recorder type, different system sensitivities and attenuator settings.

Thus, some of data were digitized, and antenna corrections applied to form a uniform database for easy comparison of one set of measurements with another. The 0.3 second peak function was chosen because it was the only mode which enhanced pulse type signals, particularly the Loran signals. The results of measurements made throughout the TOK area and at Jan Lake, a quiet site about 33 miles to the northwest, are shown in Figures 8 thru 26. These represent peak signal levels in the 2-32 MHz frequency range at all the measurement sites on the various dates during the measurement campaign. The NM17/27A, the 20 ft monopole, and battery power were used for these measurements. The Anzac preamp was used only for data acquired in figures 8,9 and 10. The sensitivity scales -30 to +70 dB relate to 1 microvolt/m, the frequency scan was 2-32 MHz.

RFI generated by the Loran system is best characterized by data taken at the gravel pit about 0.3 mile south-southeast of the transmitter site as presented in figure 17. Loran interference dominates the background level below 8 MHz. Above 8 MHz no Loran was identified. A comparison of figures 8,9,11,12,13,14 (Loran off) with figures 10,15 and 16 (Loran on) at the Northwest receiver site does not reveal any significant interference due to the Loran station. However many of the smaller peaks (figures 10,15 and 16) in the 2 to 5 MHz range can be attributed to the Loran

transmitter about 3.5 miles to the southeast. A much more sensitive system would be needed to quantify them.

The first nine peak RFI plots, figures 8 thru 16, were taken at the OTH Northwest Receiver Site. Figure 12 shows the highest peak RFI (for the plots shown) of E ~50 dBuV/m peak at f ~10-11 MHz. The "quietest" RFI level for these plots seemed to occur on figures 8 and 10. This however, may be due to signal overload of the Anzac preamplifier.

Of the remaining RFI plots obtained at the other sites, the highest noise levels (~58 dBuV/m) occurred at the Snoshoe Motel site, figure 20 , and the lowest (max ~35 dBuV/m) at the Borealis and East D Street site, figure 19 which was next to a power line.

Discussion and Conclusions

Three procedures were used to analyze the data. To begin, the data were organized and inventoried, (see appendix A). Selected items were chosen from this list for analysis. Data which were taken while using generator power are polluted with noise and are generally not used. Those which were taken with the Anzac preamplifier in line may have strong signal overload problems and thus may show reduced gain and intermodulation products contamination. First, the field intensity was scaled at 2.5, 5, 10, 15 and 20 MHz on the records which were produced using a 10 kHz bandwidth and field intensity, on battery or commercial power. Second, selected 10kHz bandwidth, 0.3s peak records were digitized, antenna corrections applied and plotted. Comparisons were made between records to determine quantity of local noise present. Third, a large signal inventory was made to get an idea of maximum signal levels and in some cases the sources of large signals.

Our tentative conclusions and caveats concerning radio noise and RFI measurements made near the proposed Alaskan OTH are:

1.- This measurement campaign was quite successful in obtaining quantitative values of ambient (man-made and naturally occurring) noise and RFI levels near the Alaskan OTH site valid for near sunspot minimum (SSN ~ 40), early

fall, moderately geomagnetic active conditions the College,
Alaska "Equivalent daily Amplitude (A_k index)* was:

| | | |
|--------------|----|----------------------|
| 29 September | 48 | moderately disturbed |
| 2 October | 11 | quiet |
| 3 October | 57 | moderately disturbed |
| 5 October | 12 | quiet |

*This is a "local" index and relates to the measurements
better than the "planetary" A_p value

2.- A 20 ft monopole had to be constructed and utilized to
increase the sensitivity of the NM17/27A system.

3.- The receiving system noise floor was not low enough for
us to obtain strictly accurate noise measurements (see
figures 3-7).

4.- We did not measure peak RFI levels above ~58 dBuV/m
during this campaign.

5.- Comparison of data from the "quiet" Jan Lake site and
data from the Tok area show surprisingly little difference.

6.- Man-made noise generated at Tok was not found to be a
significant problem, however, this conclusion must be

tempered by the aforementioned limitations of the measurement system.

7.- More radio noise and RFI data are needed to obtain sunspot cycle, seasonal, and magnetic activity effects.

8.- Many of the field intensity measurements made were below those predicted for atmospheric noise by both CCIR 322 and NTIA 85-173. Neither the CCIR or the NTIA noise curves adequately sample the auroral regions, nor do they give the dependence of noise on geomagnetic activity.

Acknowledgements

The technical advice of Brett S. Delana and the skill in digitizing seemingly endless records of data by Guy Tytgat both of the Geophysical Institute staff are gratefully acknowledged.

The review of this report by George Hagn of SRI International , Jurgen Buchau of AFGL and Leo Collins of MITRE corporation contributed greatly to its clarity, content and readability.

References

CCIR Report 322, 1964 Published by the International Telecommunications Union.

Hagn, George (1979), Interim DOD Radio Noise and Electromagnetic Interference (EMI) Handbook, SRI Project 6512.

Spaulding, A D and J.S. Washburn (1985), Atmospheric Radio Noise: Worldwide Levels and other characteristics, NITA Rep. 85-173.

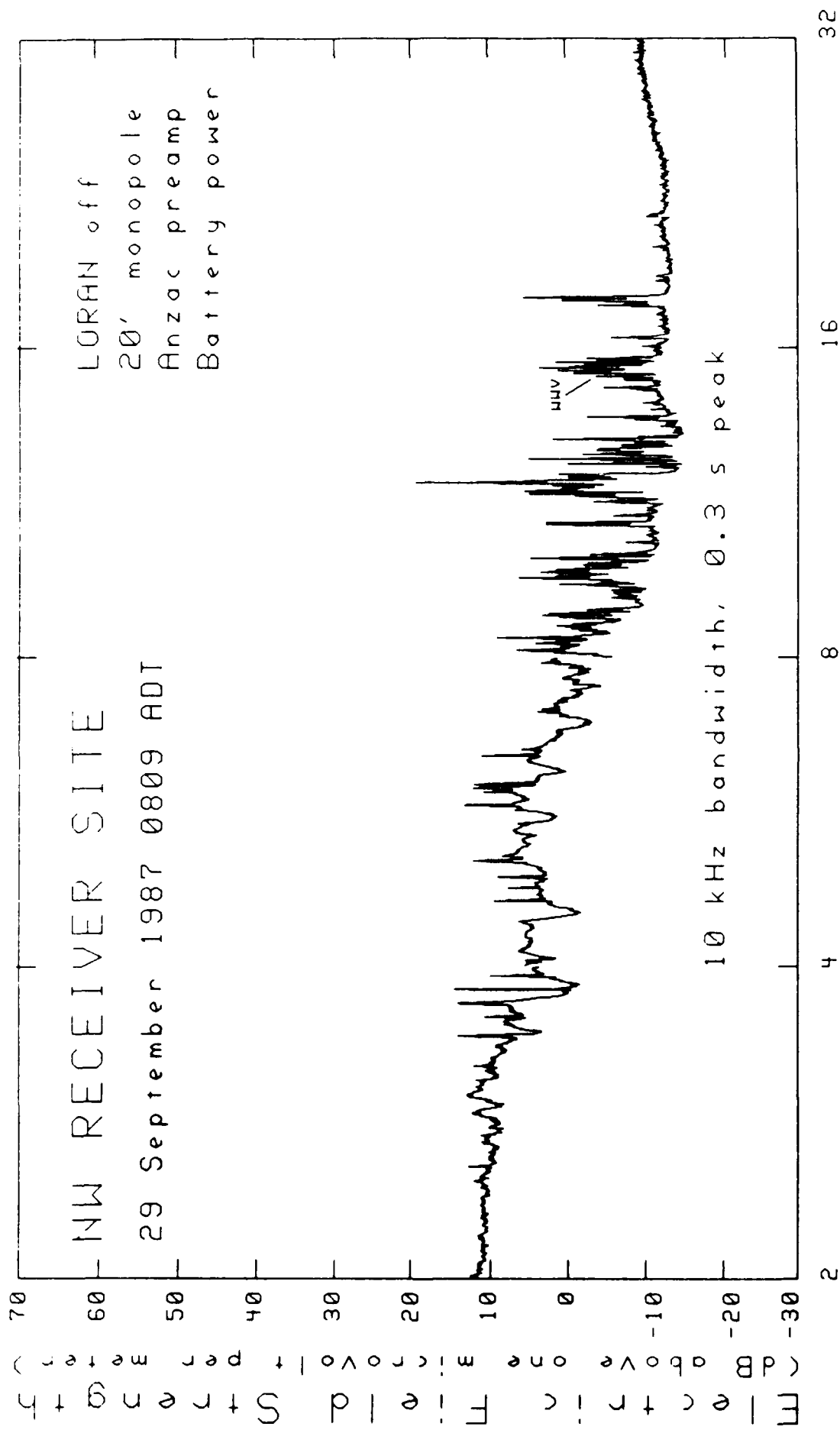


Figure 8.

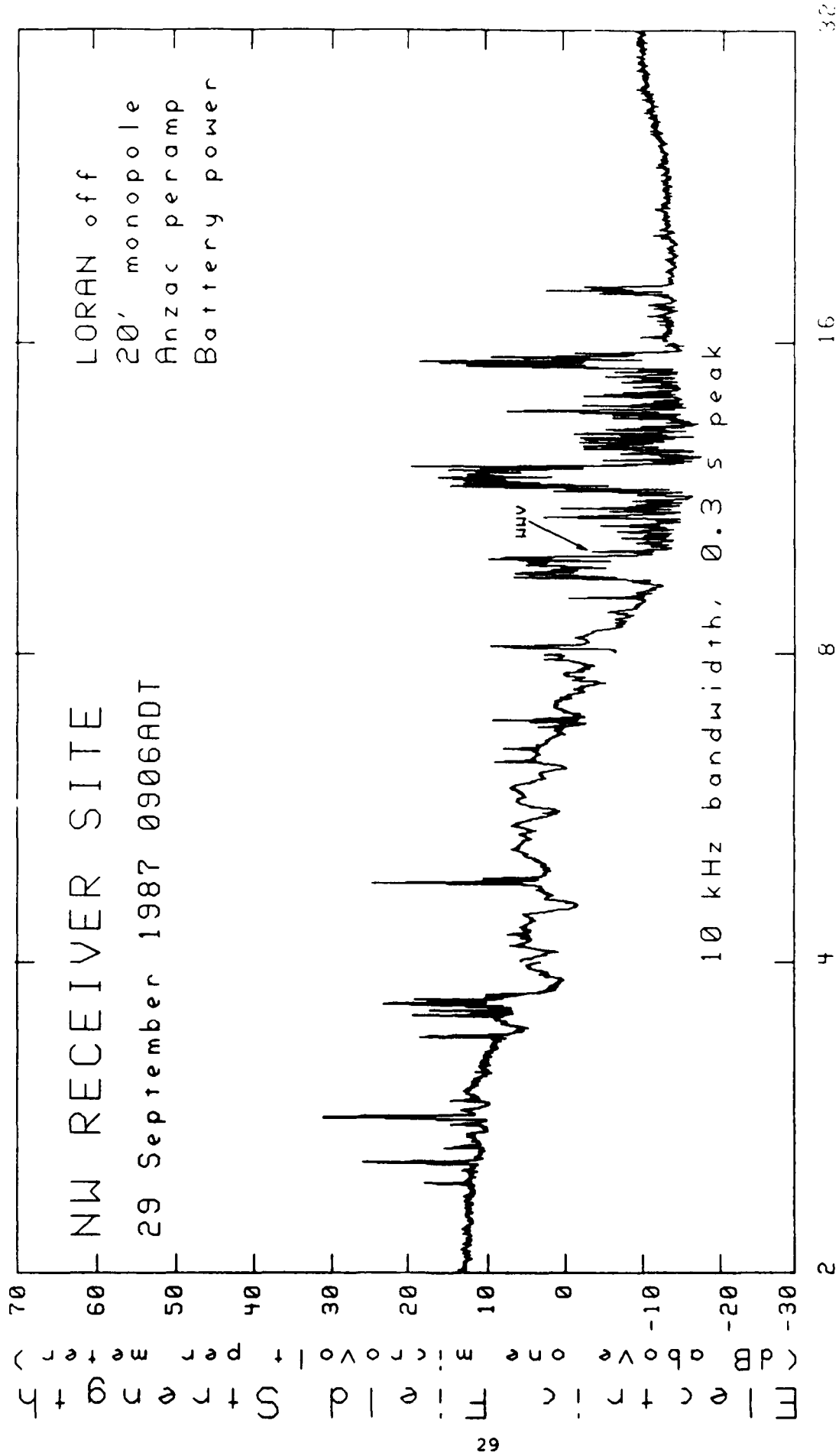


Figure 9.

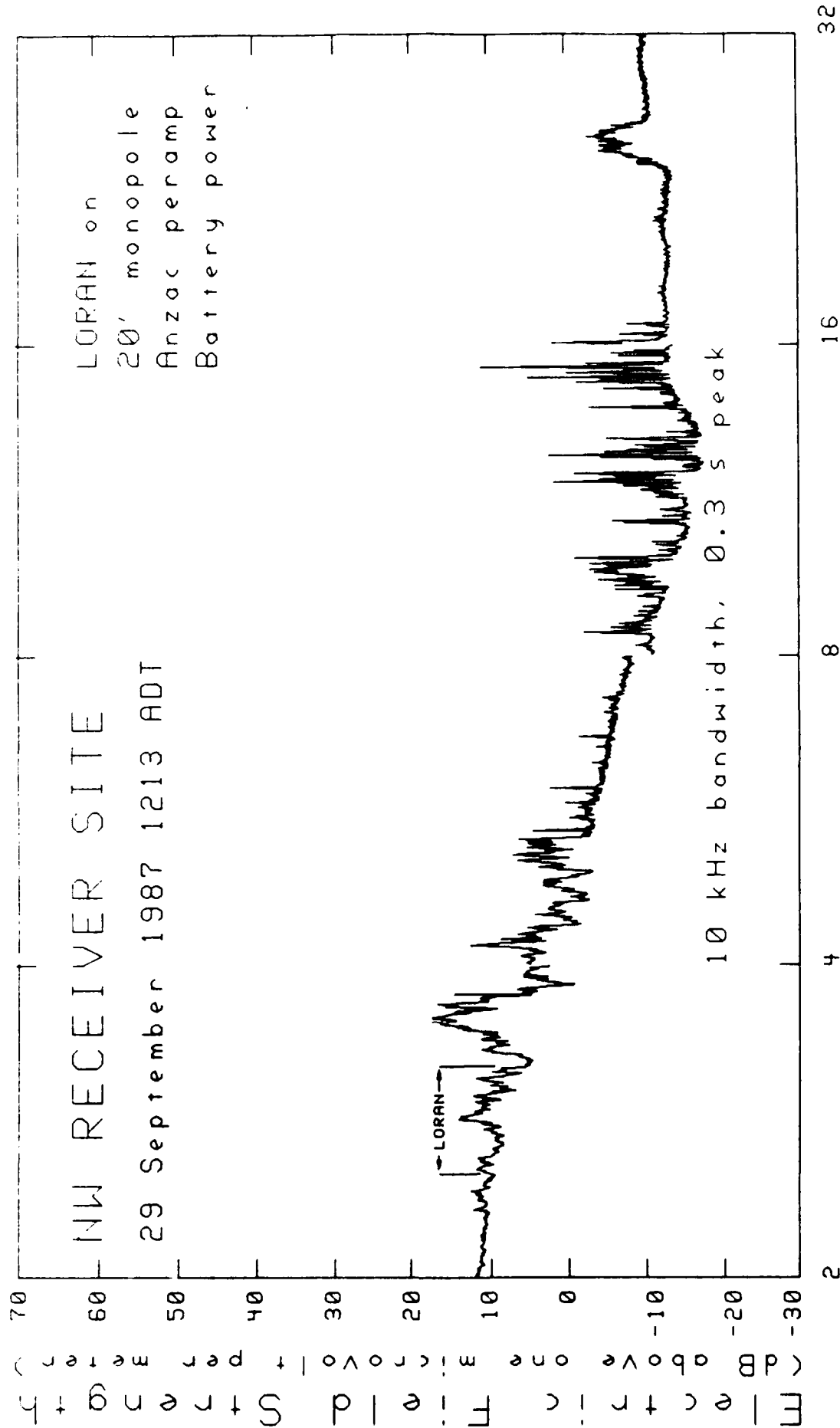


Figure 10.

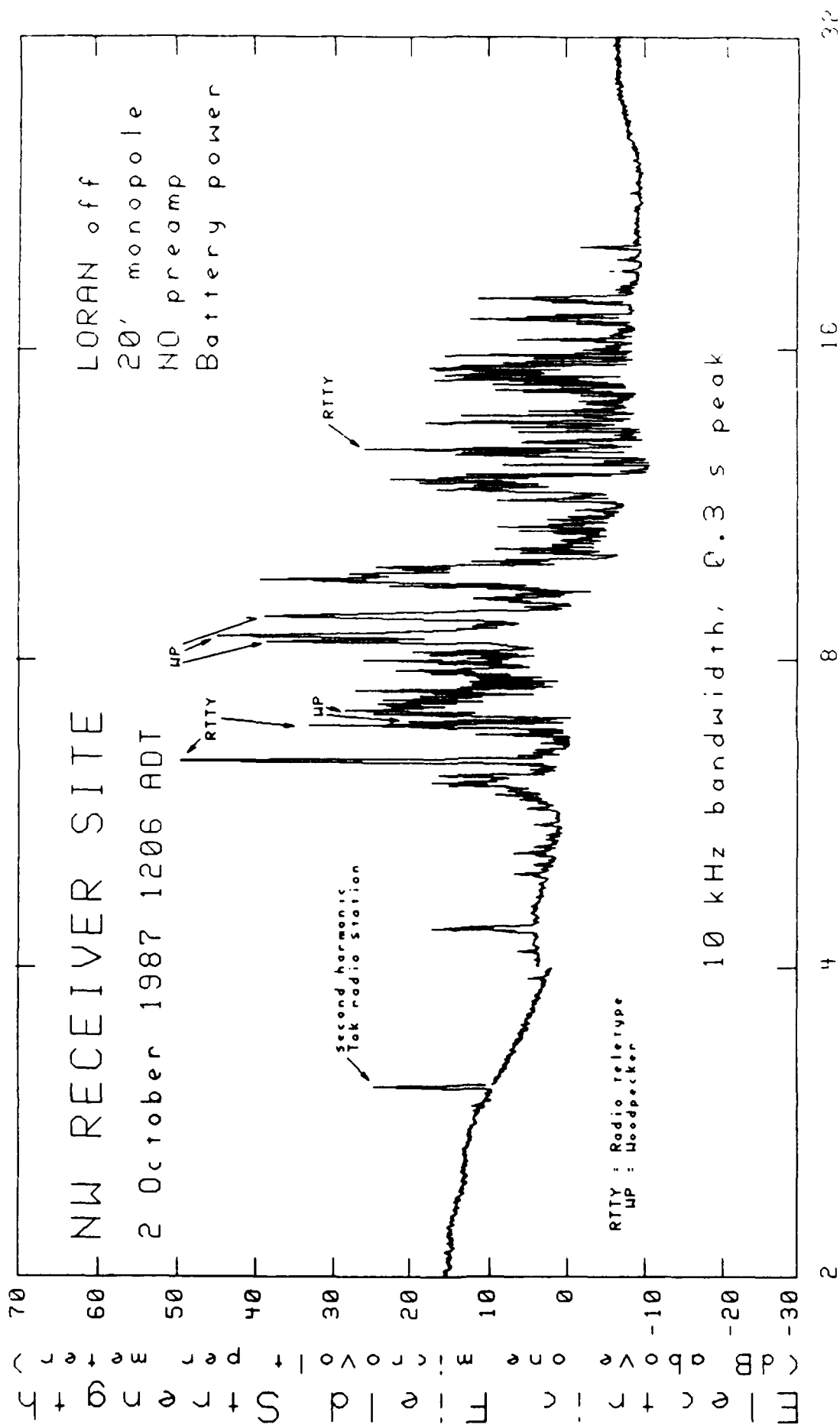


Figure 11.

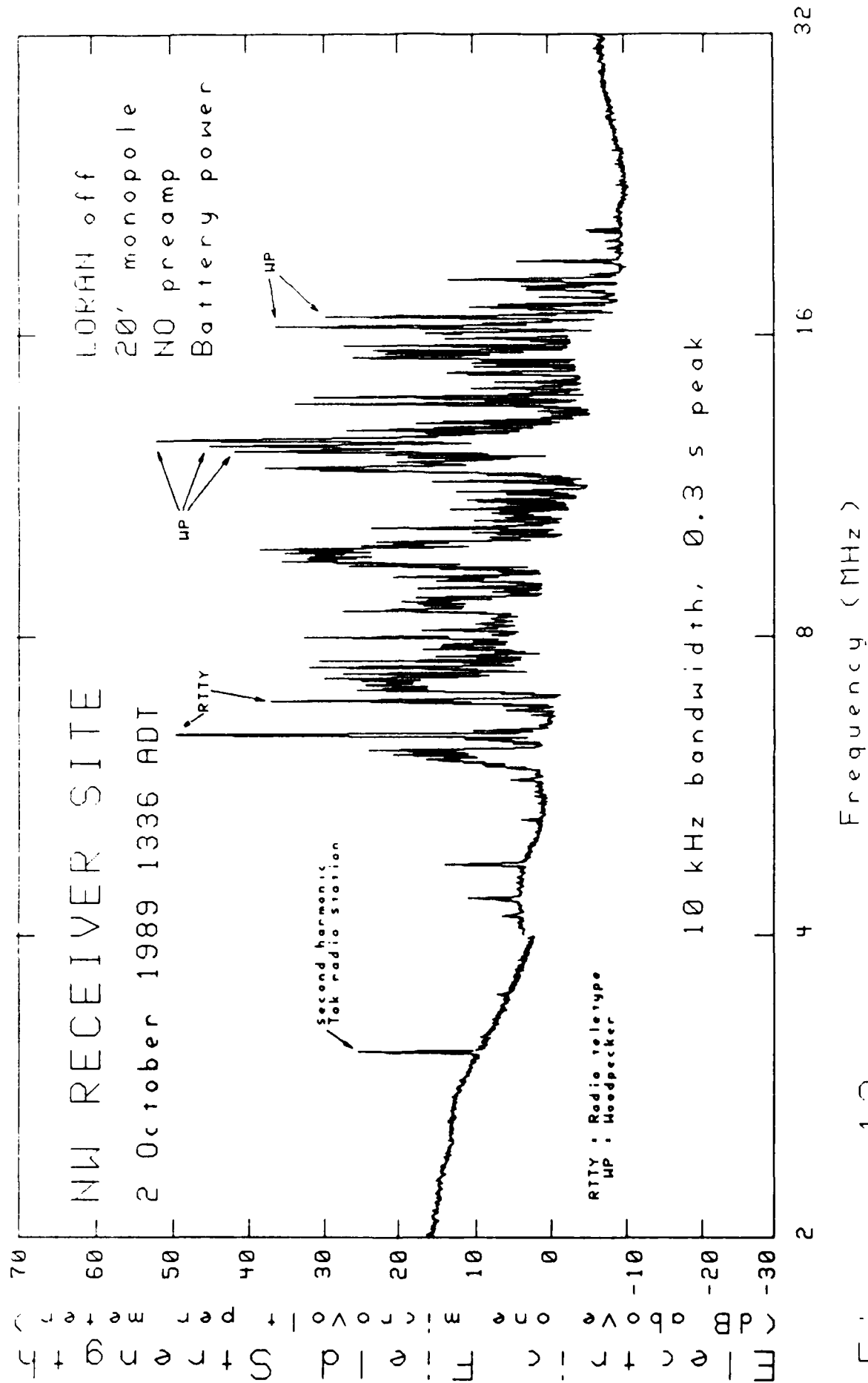


Figure 12.

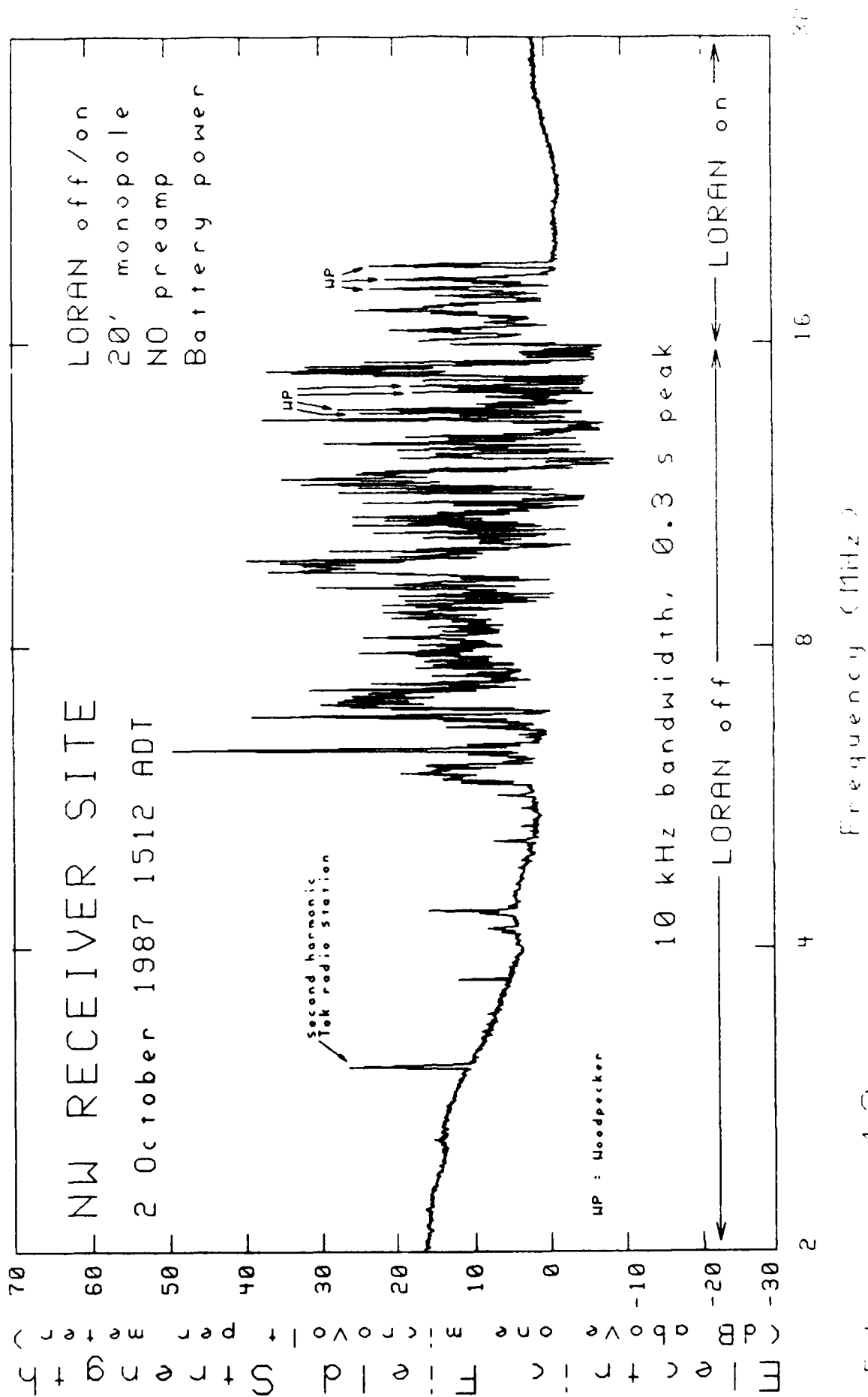


Figure 13.

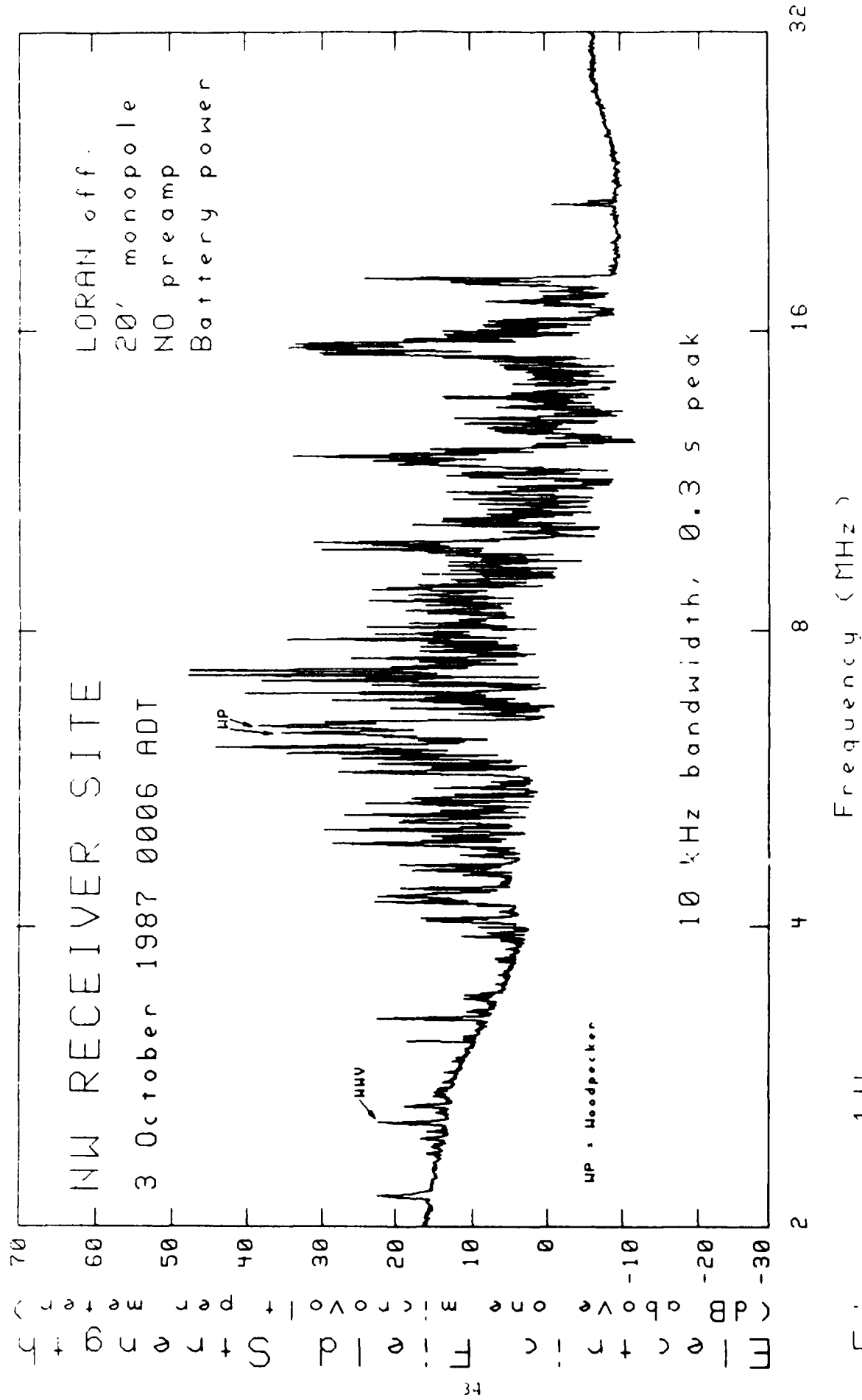


Figure 14.

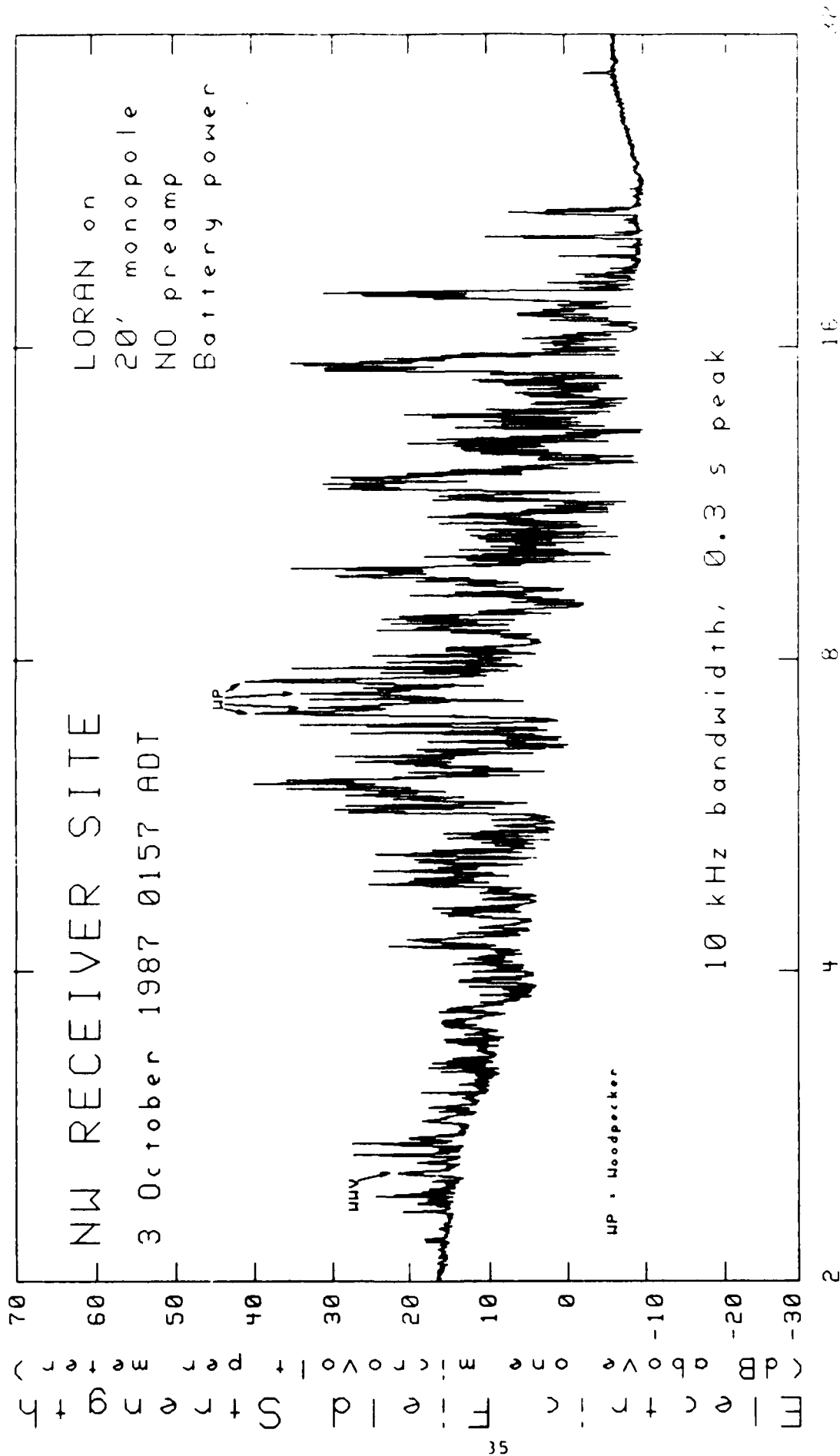


Figure 15.

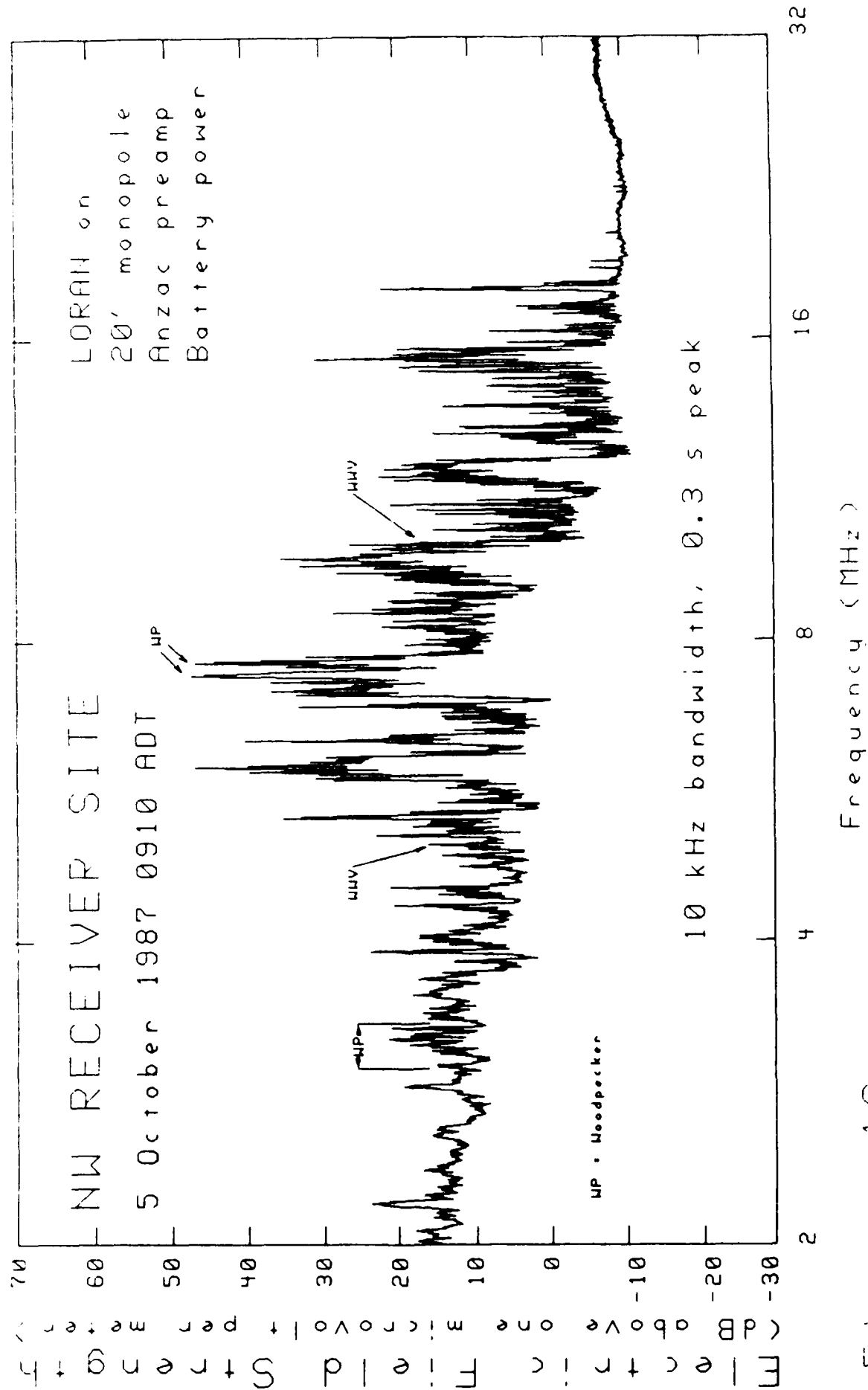


Figure 16.

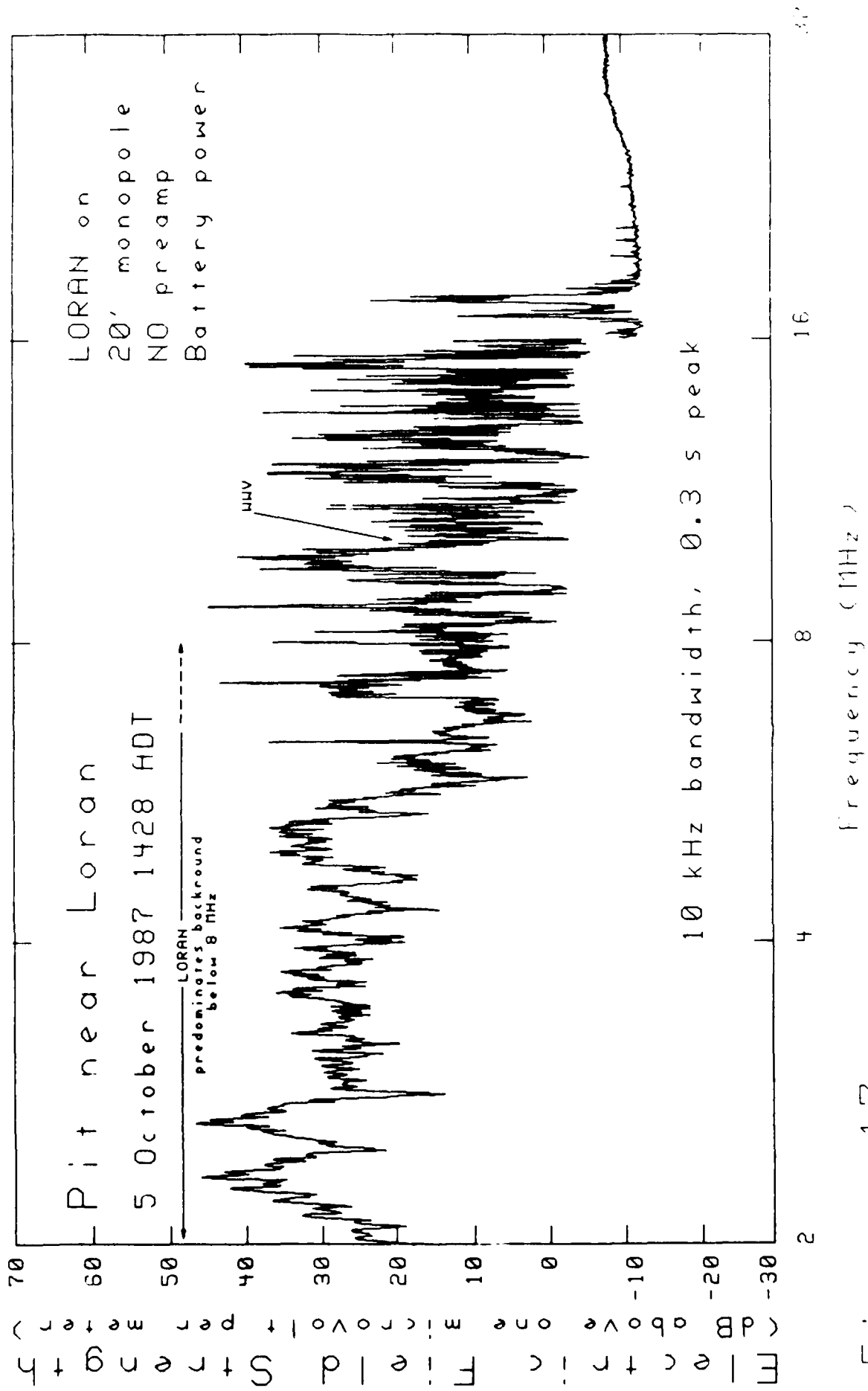


Figure 17.

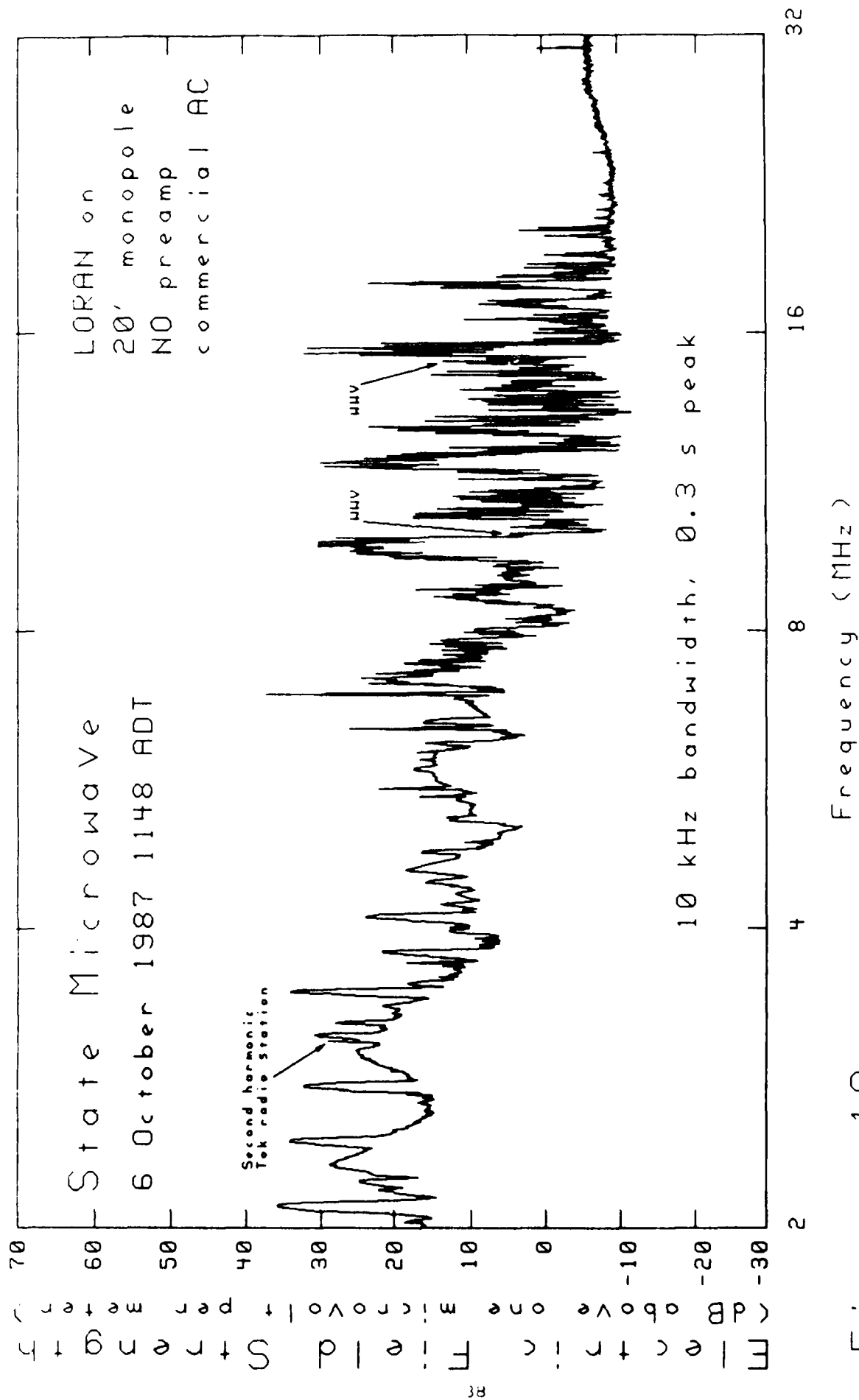


Figure 18.

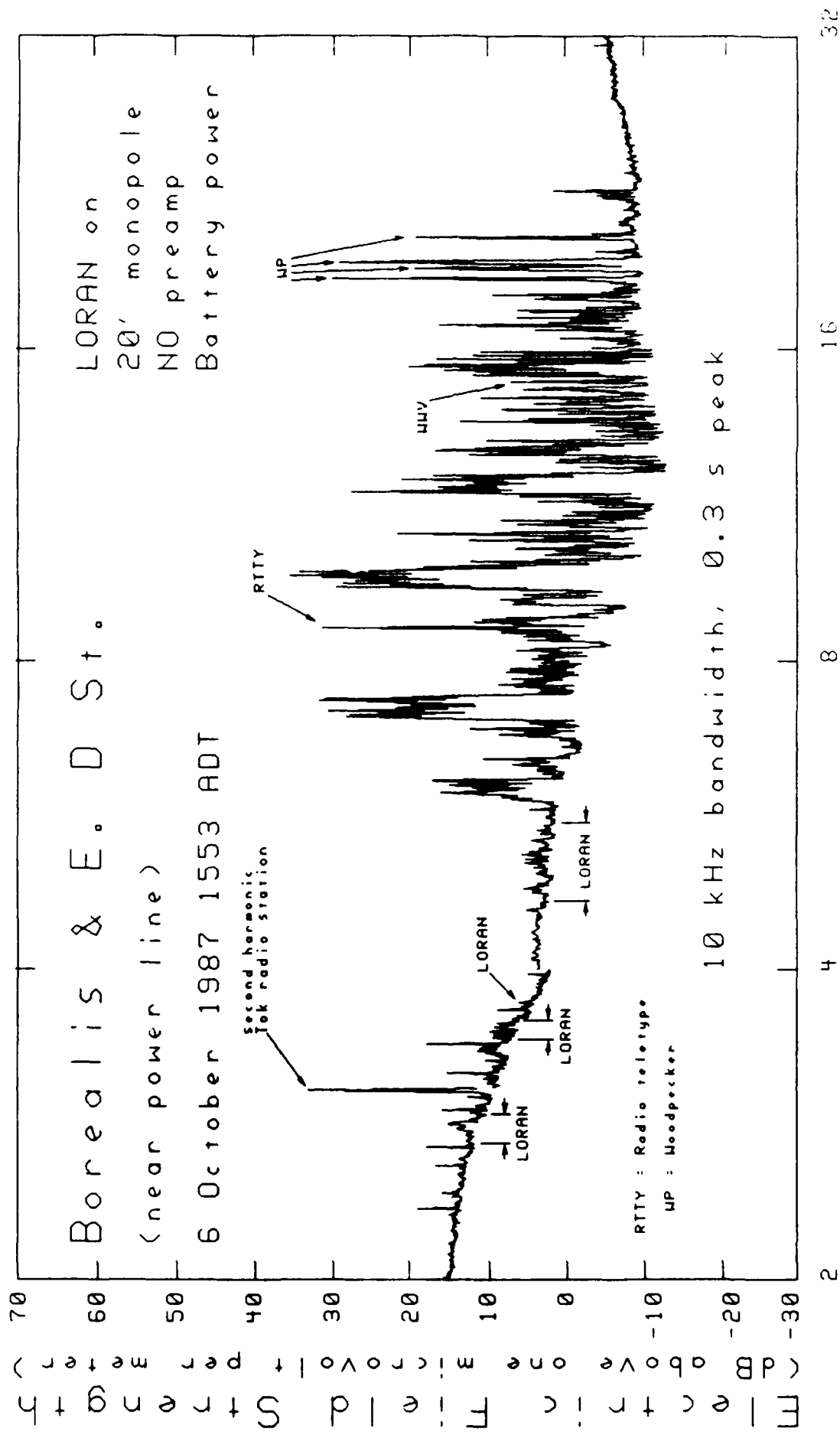


Figure 19.

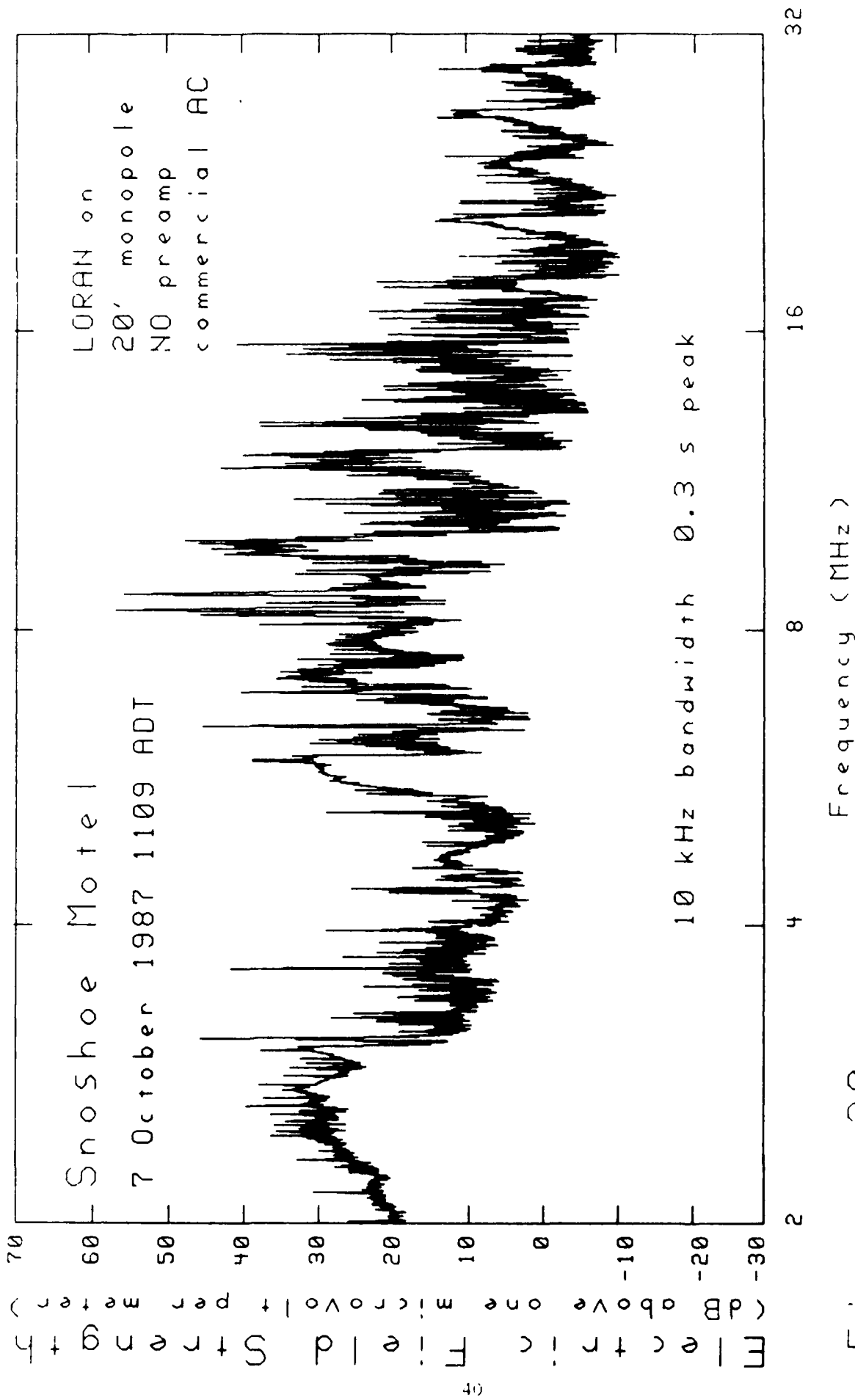


Figure 20.

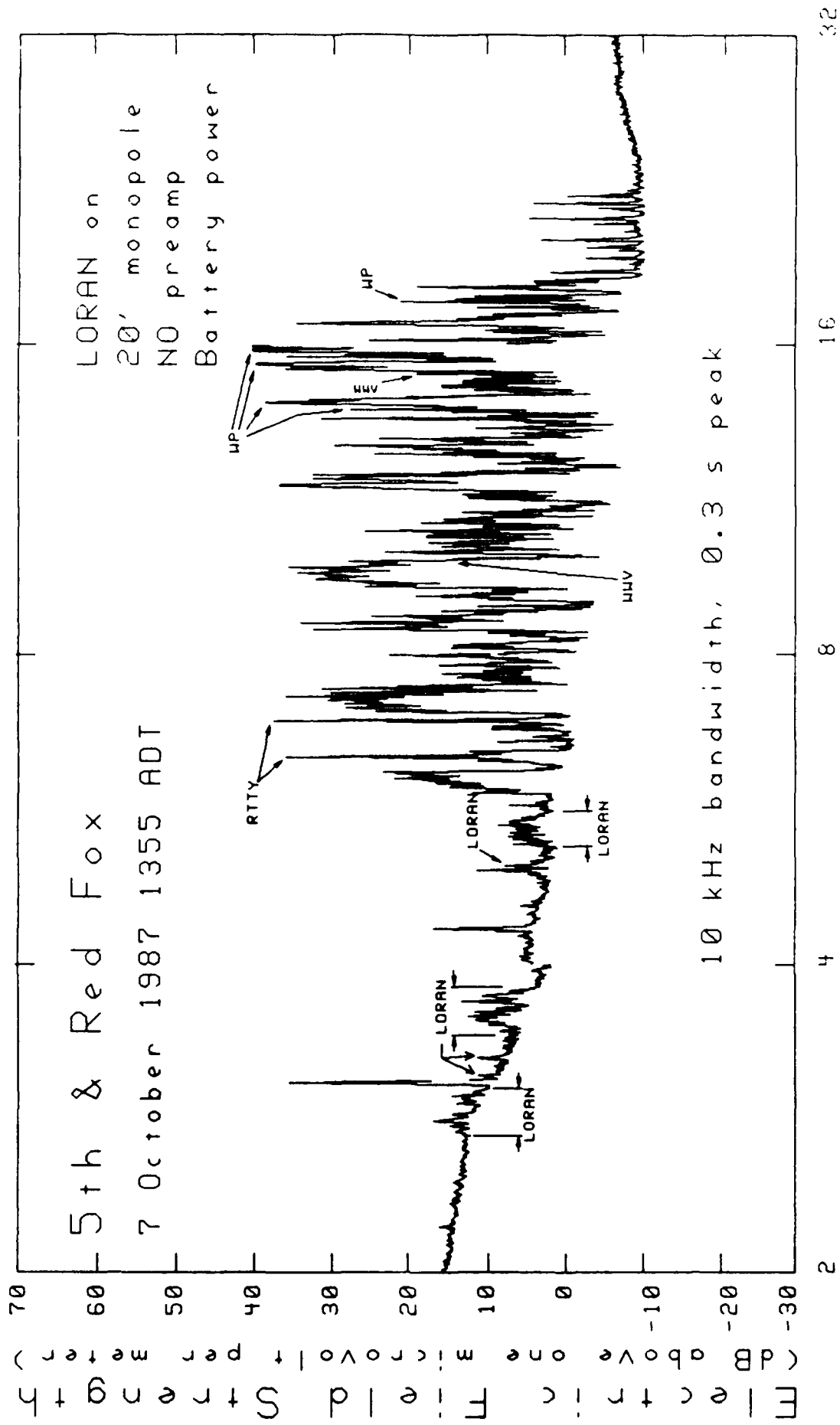


Figure 21.

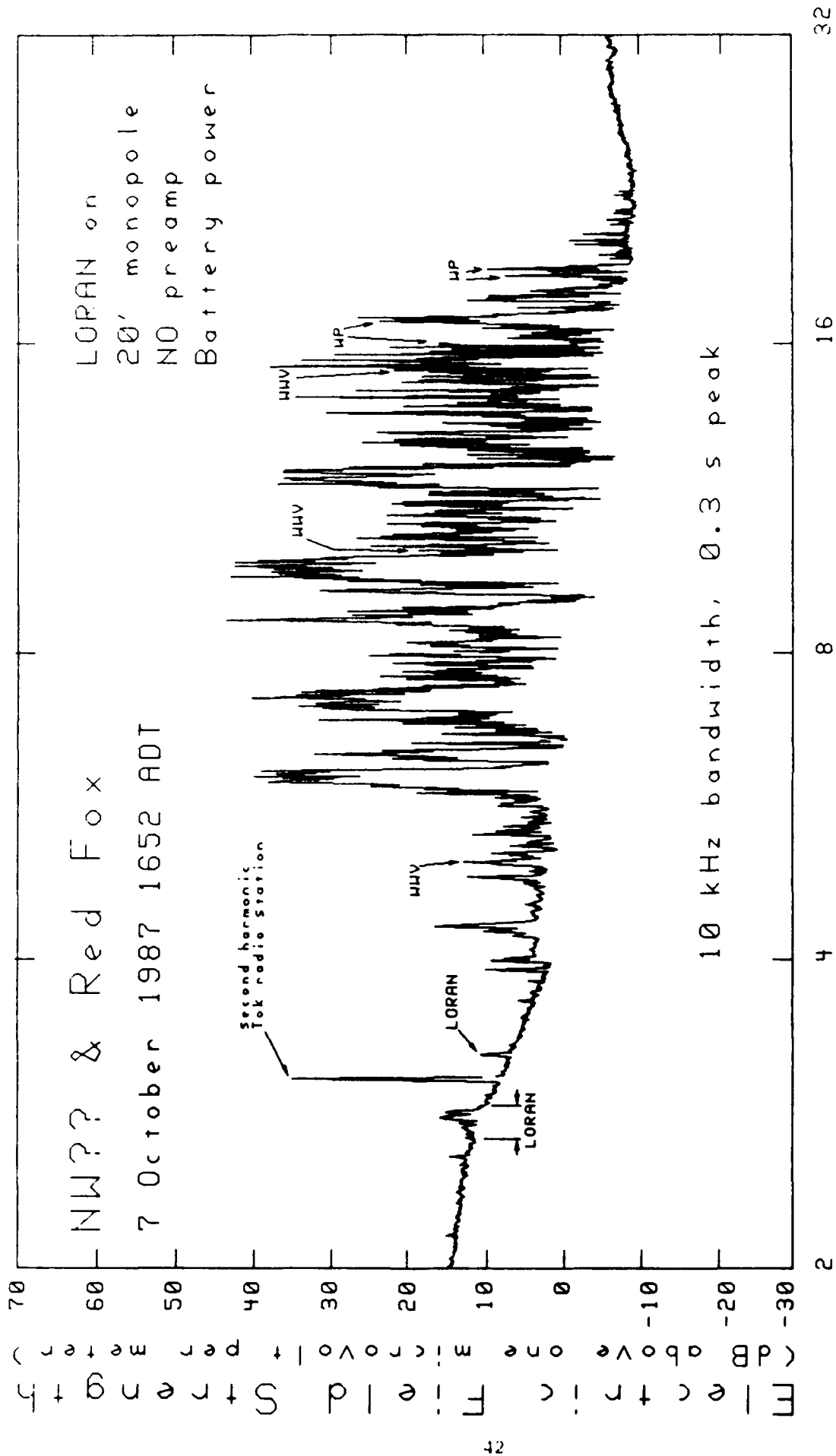


Figure 22.

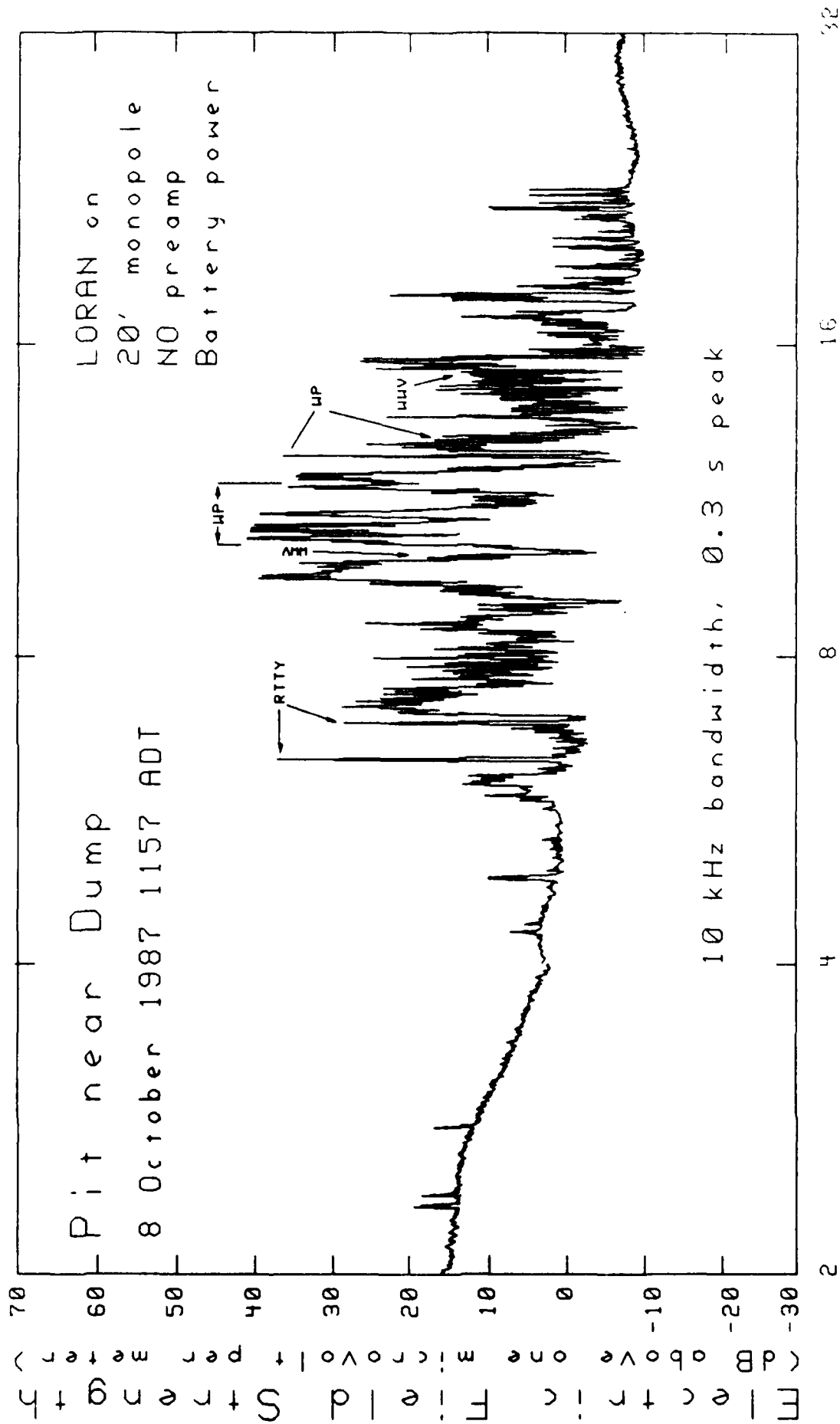


Figure 23.

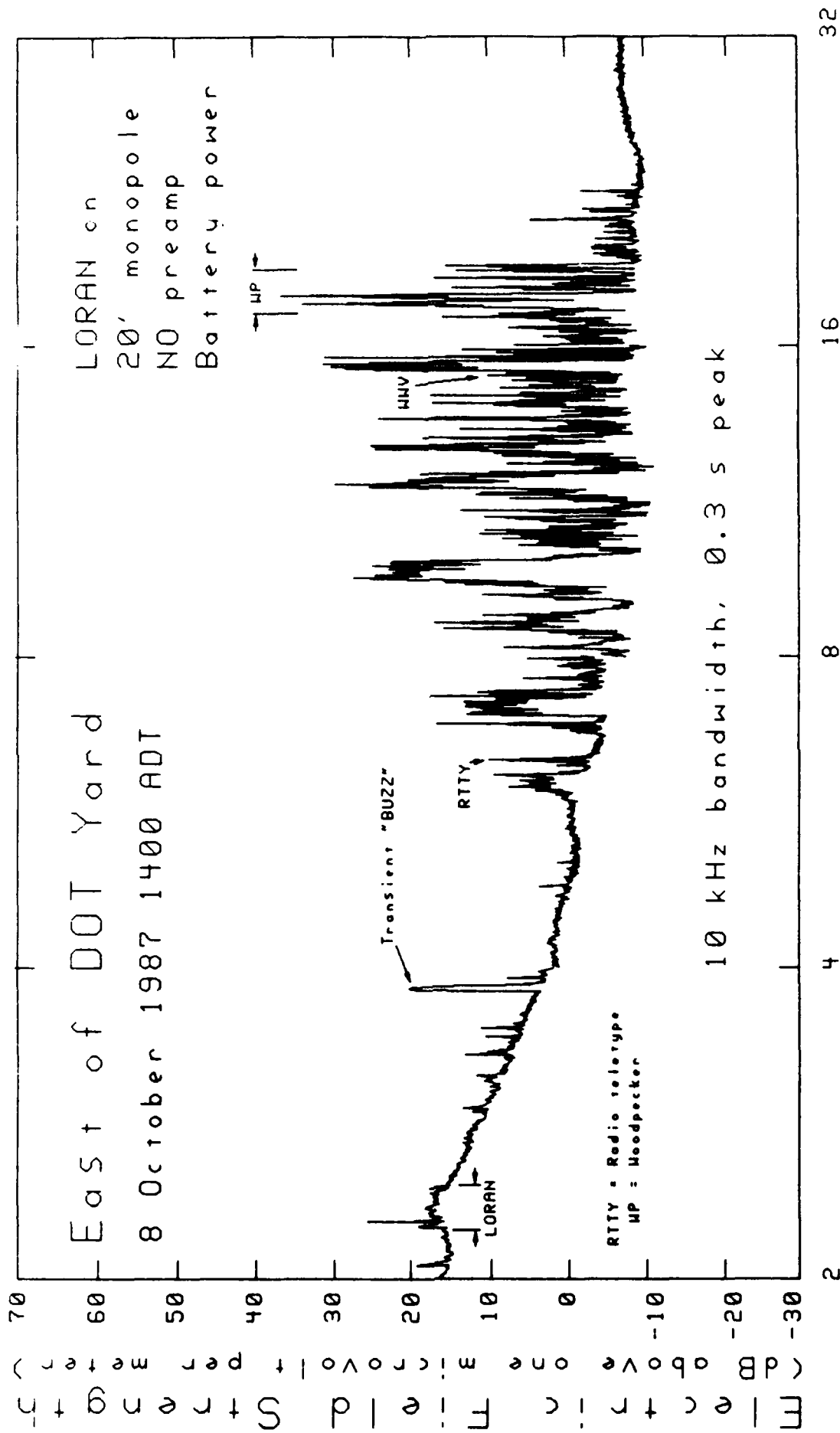


Figure 24.

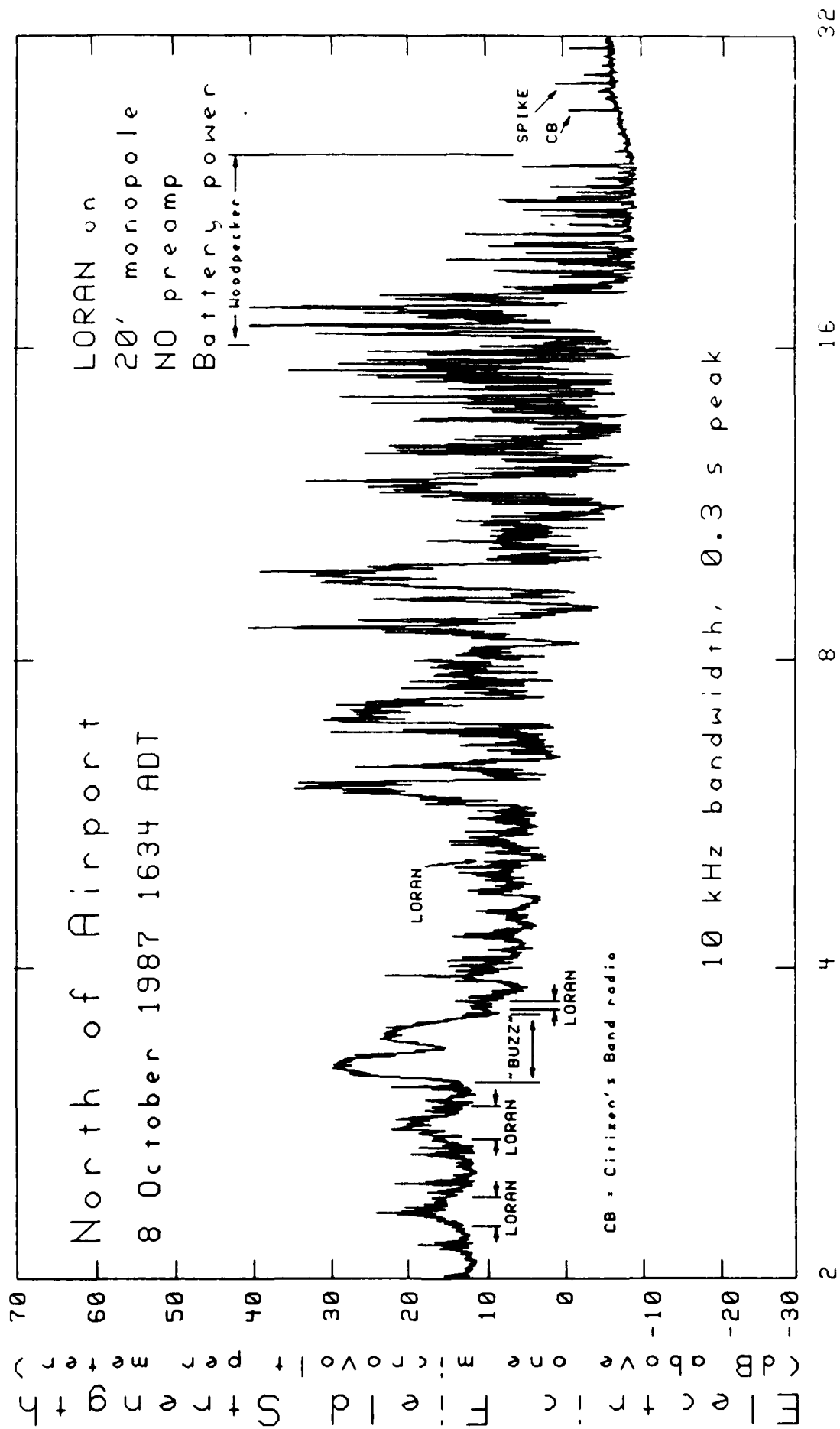


Figure 25.

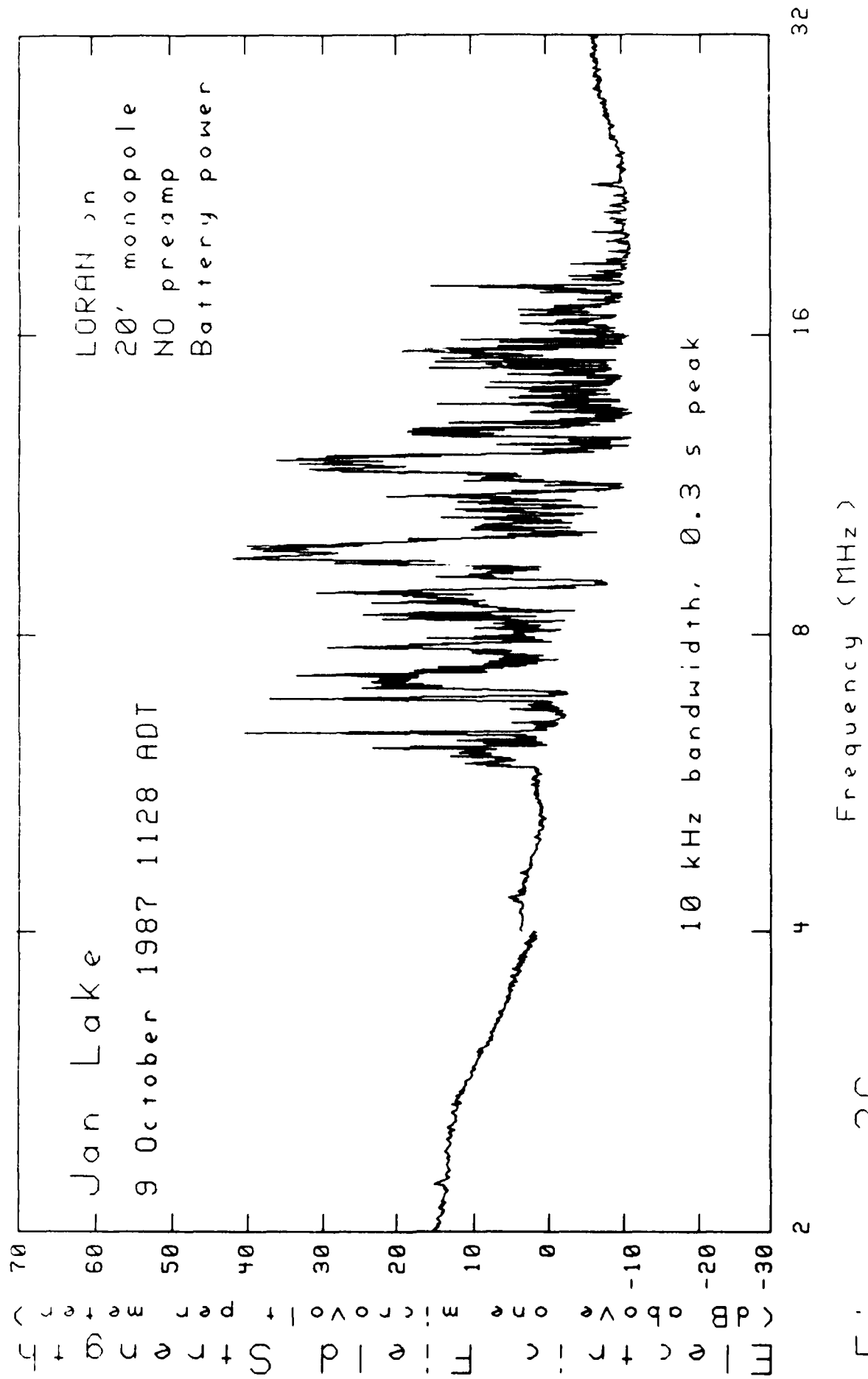


Figure 26.

Appendix A

Summary of Radio Frequency Noise Measurements
made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|---------|--------|----------|------------|
| 870923 | 1517 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 1607 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 1616 | 08-16 | 10 | -20 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 1622 | 16-32 | 10 | -20 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 1633 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 1939 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 1946 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 1952 | 08-16 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2000 | 16-32 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2201 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2208 | 02-04 | 10 | -20 | QP | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2219 | 04-08 | 01 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2307 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2317 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2344 | 08-16 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870923 | 2350 | 16-32 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0345 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0352 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0358 | 08-16 | 10 | -20 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0406 | 16-32 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0417 | 04-08 | 01 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0748 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0756 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0802 | 04-08 | 01 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0809 | 08-16 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 0816 | 16-32 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 1214 | 02-04 | 10 | -20 | FI | 41"ROD | NM17 | AC HONDA | JAN LAKE |
| 870924 | 1220 | 04-08 | 10 | -20 | FI | 41"ROD | NM17 | AC HONDA | JAN LAKE |
| 870924 | 1226 | 08-16 | 10 | -20 | FI | 41"ROD | NM17 | AC HONDA | JAN LAKE |
| 870924 | 1234 | 16-32 | 10 | -20 | FI | 41"ROD | NM17 | AC HONDA | JAN LAKE |
| 870924 | 1303 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 1309 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 1326 | 16-32 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870924 | 1335 | 02-04 | 10 | -40 | FI | NONE | NONE | BATTERY | JAN LAKE |
| 870924 | 1340 | 04-08 | 10 | -40 | FI | NONE | NONE | BATTERY | JAN LAKE |
| 870924 | 1345 | 08-16 | 10 | -40 | FI | NONE | NONE | BATTERY | JAN LAKE |
| 870924 | 1350 | 16-32 | 10 | -40 | FI | NONE | NONE | BATTERY | JAN LAKE |
| 870924 | 13?? | 08-16 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | JAN LAKE |
| 870925 | 1130 | .01- | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1140 | .25- | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1145 | .5-1 | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1150 | 1-2 | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1155 | 02-04 | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1200 | 04-08 | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1205 | 08-16 | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |

Appendix A

Summary of Radio Frequency Noise Measurements
made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|----------|--------|---------|-------------|
| 870925 | 1210 | 16-32 | 10 | +60 | 0.3 S | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1312 | 02-04 | 10 | -20 | FI | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1338 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | MOTEL, TOK |
| 870925 | 1343 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | MOTEL, TOK |
| 870925 | 1348 | 08-16 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | MOTEL, TOK |
| 870925 | 1353 | 16-32 | 10 | -40 | FI | 41"ROD | NM17 | BATTERY | MOTEL, TOK |
| 870925 | 1415 | 02-04 | 10 | -40 | FI | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1421 | 04-08 | 10 | -40 | FI | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1426 | 08-16 | 10 | -40 | FI | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1430 | 08-16 | 10 | -40 | FI | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870925 | 1435 | 16-32 | 10 | -40 | FI | 41"ROD | NM17 | AC COMM | MOTEL, TOK |
| 870926 | 1125 | 02-04 | 10 | -40 | FI | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1135 | 02-04 | 10 | -40 | FI | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1145 | 02-04 | 10 | -40 | FI | NONE | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1208 | 16-32 | 50 | -20 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1220 | 02-04 | 50 | -20 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1220 | 04-08 | 50 | -20 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1246 | 08-16 | 50 | -20 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1322 | 02-04 | 1 | -40 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1408 | 04-08 | 1 | -40 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1424 | 08-16 | 1 | -40 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870926 | 1443 | 16-32 | 1 | -40 | QP | 41"ROD | NONE | AC COMM | MOTEL, TOK |
| 870927 | 1353 | 9.1 | 10 | -20 | QP | 41 VS 20 | NONE | BATTERY | NW REC SITE |
| 870927 | 1403 | 02-04 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1407 | 04-08 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1409 | 16-32 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1412 | 08-16 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1424 | 02-04 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1430 | 04-08 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1434 | 08-16 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1440 | 16-32 | 50 | -20 | QP | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1453 | 02-04 | 10 | -40 | FI | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1502 | 16-32 | 10 | -40 | FI | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 1511 | 02-04 | 10 | -40 | FI | NONE | NONE | BATTERY | NW REC SITE |
| 870927 | 1538 | 02-04 | 50 | -20 | QP | 20' POLE | NONE | BATTERY | NW REC SITE |
| 870927 | 1545 | 04-08 | 50 | -20 | QP | 20' POLE | NONE | BATTERY | NW REC SITE |
| 870927 | 1548 | 08-16 | 50 | -20 | QP | 20' POLE | NONE | BATTERY | NW REC SITE |
| 870927 | 1554 | 16-32 | 50 | -20 | QP | 20' POLE | NONE | BATTERY | NW REC SITE |
| 870927 | 15?? | 16-32 | 10 | -40 | FI | NONE | NONE | BATTERY | NW REC SITE |
| 870927 | 15?? | 04-08 | 10 | -40 | FI | NONE | NONE | BATTERY | NW REC SITE |
| 870927 | 15?? | 08-16 | 10 | -40 | FI | NONE | NONE | BATTERY | NW REC SITE |
| 870927 | 1617 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 870927 | 1621 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 870927 | 1624 | 08-16 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 870927 | 1627 | 16-32 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |

Appendix A

Summary of Radio Frequency Noise Measurements
made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|----------|--------|---------|-------------|
| 870927 | 1639 | 6.1 | 10 | -20 | QP | 41 VS 20 | NONE | BATTERY | NW REC SITE |
| 870927 | 1650 | 13.6 | 10 | -20 | QP | 41 VS 20 | NONE | BATTERY | NW REC SITE |
| 870927 | 17?? | 08-16 | 10 | -40 | FI | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870927 | 17?? | 04-08 | 10 | -40 | FI | 41"ROD | NONE | BATTERY | NW REC SITE |
| 870928 | 1854 | 02-04 | 10 | -40 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 1900 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 1911 | 04-08 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 1925 | 04-08 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 1938 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 1946 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 1952 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 1959 | 16-32 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 19?? | 02-04 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 19?? | 04-08 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 2005 | 16-32 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 2011 | 16-32 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 2044 | 02-04 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 2103 | 02-04 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 2109 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870928 | 2116 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0627 | 02-04 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0637 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0641 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0649 | 04-08 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0657 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0703 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0709 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0716 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0726 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0733 | 16-32 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0739 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0744 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 0800 | 02-04 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0804 | 02-04 | 10 | -40 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0809 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0813 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0817 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0821 | 04-08 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0825 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0829 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0834 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0838 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0842 | 08-16 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0846 | 16-32 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 0850 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |

Appendix A

Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|---------|------------|---------|-------------|
| 870929 | 0855 | 16-32 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0902 | 02-04 | 10 | -40 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0906 | 02-04 | 10 | -40 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0908 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0917 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0923 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0926 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0934 | 08-16 | 10 | -20 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0940 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0946 | 08-16 | 50 | 0 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 0954 | 16-32 | 10 | -40 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1001 | 16-32 | 10 | -40 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1006 | 16-32 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1013 | 02-04 | 10 | -40 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1017 | 02-04 | 10 | -40 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1021 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1035 | 04-08 | 10 | -40 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1041 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1046 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1055 | 08-16 | 50 | -20 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1059 | 08-16 | 10 | -20 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 10?? | 02-04 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1103 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1107 | 02-04 | 10 | -20 | FI | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1112 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1118 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1122 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1127 | 04-08 | 10 | -20 | FI | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1131 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1140 | 08-16 | 10 | -20 | FI | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1144 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1148 | 08-16 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1153 | 16-32 | 10 | -20 | FI | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 11?? | 04-08 | 50 | 0 | 0.3 S | 20' | POLE ANZAC | AC GEN | NW REC SITE |
| 870929 | 1209 | 02-04 | 10 | -20 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1213 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1217 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1222 | 04-08 | 10 | -20 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1226 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1232 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1236 | 08-16 | 10 | -20 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1240 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1244 | 08-16 | 50 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1249 | 16-32 | 10 | -20 | FI | 20' | POLE ANZAC | BATTERY | NW REC SITE |
| 870929 | 1254 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE ANZAC | BATTERY | NW REC SITE |

Appendix A

Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|----------|--------|---------|-------------|
| 870929 | 1257 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 1312 | 02-04 | 10 | -40 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1317 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1321 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1329 | 04-08 | 10 | -40 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1333 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1338 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1357 | 08-16 | 50 | ??? | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1406 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1414 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1419 | 08-16 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1428 | 16-32 | 10 | -40 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1433 | 16-32 | 10 | -40 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1438 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1451 | 02-04 | 10 | -40 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1501 | 02-04 | 10 | -40 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1512 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1518 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1525 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1532 | 04-08 | 10 | -40 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1537 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1548 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1556 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1613 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 1618 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | AC GEN | NW REC SITE |
| 870929 | 2305 | 02-04 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 2312 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 2317 | 02-04 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 2324 | 04-08 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 2329 | 04-08 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 2334 | 04-08 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 2342 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 2347 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870929 | 23?? | 08-16 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0001 | 02-04 | 10 | -40 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0007 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0017 | 04-08 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0022 | 04-08 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0027 | 04-08 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0032 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0036 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0041 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0047 | 16-32 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0052 | 16-32 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0056 | 16-32 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |

Appendix A

Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|----------|--------|---------|-------------|
| 870930 | 00?? | 02-04 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0103 | 02-04 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0108 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0112 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0119 | 04-08 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0124 | 04-08 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0129 | 04-08 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0141 | 08-16 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0145 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0149 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0159 | 16-32 | 10 | -20 | FI | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0204 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 870930 | 0210 | 16-32 | 50 | 0 | 0.3 S | 20' POLE | ANZAC | BATTERY | NW REC SITE |
| 871001 | 1055 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1101 | 02-04 | 01 | -40 | FI | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1108 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1111 | 02-04 | 01 | -40 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1114 | 02-04 | 50 | -40 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1119 | 02-04 | 50 | -40 | FI | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1129 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1132 | 02-04 | 01 | -40 | FI | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1136 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1140 | 02-04 | 01 | -40 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1145 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1148 | 02-04 | 50 | -40 | FI | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1209 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871001 | 1222 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1238 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1244 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871001 | 1249 | 02-04 | 01 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871001 | 1252 | 02-04 | .1 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871001 | 1354 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1400 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1404 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC GEN | NW REC SITE |
| 871001 | 1547 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871001 | 1552 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871001 | 1556 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871001 | 1603 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0900 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0904 | 02-04 | 1 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0908 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0912 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0915 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0919 | 04-08 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0924 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |

Appendix A

Summary of Radio Frequency Noise Measurements
made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|----------|--------|---------|-------------|
| 871002 | 0927 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0932 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0941 | 16-32 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0944 | 16-32 | 10 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 0947 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1045 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1048 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1053 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1057 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1104 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1107 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1112 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1130 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC B&S | NW REC SITE |
| 871002 | 1201 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1206 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1210 | 02-04 | 50 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1215 | 04-08 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1220 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1225 | 04-08 | 50 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1231 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1235 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1239 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1243 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1249 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1254 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1258 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1332 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1336 | 02-04 | 10 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1340 | 02-04 | 50 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1347 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1352 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1357 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1403 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1409 | 08-16 | 10 | +20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1412 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1417 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1423 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1426 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1429 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1434 | 02-04 | 01 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1438 | 02-04 | 01 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1442 | 04-08 | 01 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1445 | 04-08 | 01 | -40 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1449 | 08-16 | 01 | -40 | FI | 20' POLE | NONE | BATTERY | NW REC SITE |
| 871002 | 1453 | 08-16 | 01 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW REC SITE |

Appendix A

Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|---------|--------|-------|---------------------|
| 871002 | 1458 | 16-32 | 01 | -40 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1502 | 16-32 | 01 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1509 | 02-04 | 10 | -40 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1512 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1516 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1520 | 04-08 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1523 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1527 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1531 | 08-16 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1534 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1540 | 08-16 | 50 | 0 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1546 | 16-32 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1550 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871002 | 1602 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1607 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1612 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 16 7 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1630 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1642 | 02-04 | 10 | -40 | FI | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1647 | 02-04 | 10 | -40 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1651 | 04-08 | 10 | -20 | FI | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1657 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1702 | 08-16 | 10 | -20 | FI | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1707 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1715 | 16-32 | 10 | -20 | FI | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 1719 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 2321 | 08-16 | 10 | -20 | FI | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 2326 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 2330 | 08-16 | 10 | 0 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 2334 | 16-32 | 10 | -20 | FI | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 2339 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 2345 | 04-08 | 10 | -20 | FI | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871002 | 2349 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC B&S NW REC SITE |
| 871003 | 0002 | 02-04 | 10 | -40 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0006 | 02-04 | 10 | -40 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0010 | 02-04 | 50 | -40 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0015 | 04-08 | 50 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0020 | 04-08 | 50 | 0 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0027 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0031 | 04-08 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0039 | 08-16 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0044 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0049 | 08-16 | 50 | 0 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0055 | 16-32 | 10 | -40 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0100 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |

Appendix A

Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|---------|--------|-------|-------------------------|
| 871003 | 0113 | 02-04 | 10 | -40 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0117 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0121 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0126 | 04-08 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0130 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0135 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0141 | 08-16 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0146 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0150 | 08-16 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0157 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 01?? | 16-32 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0202 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0207 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871003 | 0211 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0906 | 02-04 | 10 | -20 | FI | 20' | POLE | ANZAC | BATTERY NW REC SITE |
| 871005 | 0916 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE | ANZAC | BATTERY NW REC SITE |
| 871005 | 0919 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | ANZAC | BATTERY NW REC SITE |
| 871005 | 0922 | 04-08 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0927 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0932 | 04-08 | 50 | 0 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0938 | 08-16 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0943 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0948 | 08-16 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0953 | 16-32 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 0958 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 1004 | 16-32 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY NW REC SITE |
| 871005 | 1422 | 02-04 | 10 | -40 | FI | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1428 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1433 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1439 | 04-08 | 10 | -40 | FI | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1444 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1449 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1455 | 08-16 | 10 | -20 | FI | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1501 | 08-16 | 10 | -20 | 0.03S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1506 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1512 | 08-16 | 50 | 0 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1554 | 16-32 | 10 | -40 | FI | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1559 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871005 | 1612 | 16-32 | 50 | -20 | 0.3 S | 20' | POLE | NONE | BATTERY PIT NR LORAN ST |
| 871006 | 1141 | 02-04 | 10 | -40 | FI | 20' | POLE | NONE | AC COMM STATE MICROWAVE |
| 871006 | 1148 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC COMM STATE MICROWAVE |
| 871006 | 1202 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE | NONE | AC COMM STATE MICROWAVE |
| 871006 | 1211 | 04-08 | 10 | -20 | FI | 20' | POLE | NONE | AC COMM STATE MICROWAVE |
| 871006 | 1219 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE | NONE | AC COMM STATE MICROWAVE |
| 871006 | 1225 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE | NONE | AC COMM STATE MICROWAVE |

Appendix A

Summary of Radio Frequency Noise Measurements
made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|---------|-----------|---------|-----------------|
| 871006 | 1238 | 08-16 | 10 | -20 | FI | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1249 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1256 | 08-16 | 50 | 0 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1305 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1311 | 16-32 | 10 | -20 | FI | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1317 | 16-32 | 50 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1324 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1332 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1340 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1347 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | STATE MICROWAVE |
| 871006 | 1548 | 02-04 | 10 | -40 | FI | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1553 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1558 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1603 | 04-08 | 10 | -40 | FI | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1607 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1615 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1624 | 08-16 | 10 | -40 | FI | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1629 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1634 | 08-16 | 50 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1640 | 16-32 | 10 | -20 | FI | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1646 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1651 | 16-32 | 50 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1701 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1707 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1712 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1717 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE NONE | BATTERY | BOREALIS & E. D |
| 871006 | 1921 | 02-04 | 10 | -40 | FI | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 1927 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 1932 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 1938 | 04-08 | 10 | -20 | FI | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 1944 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 1950 | 04-08 | 50 | 0 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 1957 | 08-16 | 10 | -20 | FI | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 2004 | 08-16 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 2009 | 08-16 | 50 | 0 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 2016 | 16-32 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 2021 | 16-32 | 10 | -20 | FI | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871006 | 2027 | 16-32 | 50 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871007 | 1101 | 02-04 | 10 | -40 | FI | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871007 | 1109 | 02-04 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871007 | 1114 | 02-04 | 50 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871007 | 1120 | 04-08 | 10 | -40 | FI | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871007 | 1128 | 04-08 | 10 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871007 | 1135 | 04-08 | 50 | -20 | 0.3 S | 20' | POLE NONE | AC COMM | MOTEL, TOK |
| 871007 | 1141 | 08-16 | 10 | -20 | FI | 20' | POLE NONE | AC COMM | MOTEL, TOK |

Appendix A

Summary of Radio Frequency Noise Measurements
made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|----------|--------|---------|-----------------|
| 871007 | 1148 | 08-16 | 10 | 0 | 0.3 S | 20' POLE | NONE | AC COMM | MOTEL, TOK |
| 871007 | 1154 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | NONE | AC COMM | MOTEL, TOK |
| 871007 | 1204 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | AC COMM | MOTEL, TOK |
| 871007 | 1208 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC COMM | MOTEL, TOK |
| 871007 | 1221 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | AC COMM | MOTEL, TOK |
| 871007 | 1227 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | AC COMM | MOTEL, TOK |
| 871007 | 1351 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1355 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1358 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1403 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1407 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1407 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1416 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1419 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1423 | 08-16 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1427 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1434 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1438 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1441 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | 5TH & RED FOX |
| 871007 | 1648 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1652 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1656 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1700 | 04-08 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1704 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1708 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1713 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1718 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1721 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1727 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1730 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871007 | 1734 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | NW?? & RED FOX |
| 871008 | 1153 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1157 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1200 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1209 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1213 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1216 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1222 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1225 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1229 | 08-16 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1232 | 08-16 | 50 | +20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1239 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1242 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1246 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | PIT NEAR DUMP |
| 871008 | 1358 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |

Appendix A

Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|----------|--------|---------|-----------------|
| 871008 | 1400 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1403 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1408 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1413 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1417 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1424 | 08-16 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1428 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1433 | 08-16 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1439 | 16-32 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1443 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1449 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | EAST OF DOT YRD |
| 871008 | 1630 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1634 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1638 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1644 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1649 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1653 | 04-08 | 50 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1736 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1741 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1745 | 08-16 | 50 | 0 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1750 | 16-32 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1755 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871008 | 1759 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | N. OF AIRPORT |
| 871009 | 1124 | 02-04 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1128 | 02-04 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1132 | 02-04 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1137 | 04-08 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1140 | 04-08 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1144 | 04-08 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1150 | 08-16 | 10 | -20 | FI | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1154 | 08-16 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1158 | 08-16 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1203 | 16-32 | 10 | -40 | FI | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1207 | 16-32 | 10 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871009 | 1211 | 16-32 | 50 | -20 | 0.3 S | 20' POLE | NONE | BATTERY | JAN LAKE |
| 871013 | 1411 | .5-1 | 10 | -20 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1417 | .5-1 | 10 | +20 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1426 | .5-1 | 10 | +40 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1434 | .1-.2 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1444 | .1-.2 | 01 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1449 | .1-.2 | 01 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1455 | .1-.2 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1501 | .1-.2 | 10 | -20 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1507 | .2-.5 | 10 | -20 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1514 | .2-.5 | 10 | +20 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |

Appendix A

Summary of Radio Frequency Noise Measurements made near Tok, Alaska, September and October 1987.

| DATE | TIME ADT | BAND (MHz) | BW kHz | ATN dB | FUNC | ANTENNA | PREAMP | POWER | LOCATION |
|--------|-------------|---------------|-----------|-----------|-------|---------|--------|---------|-----------------|
| 871013 | 1519 | ,2-.5 | 10 | -20 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1525 | .5-1 | 10 | -20 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1531 | 1-2 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1545 | 2-4 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1554 | 2-4 | 10 | -20 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1602 | 4-8 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1613 | 8-16 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1623 | 16-32 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1634 | 04-08 | 01 | -40 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1642 | 04-08 | 10 | -20 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1648 | 04-08 | 10 | -20 | 0.3 S | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |
| 871013 | 1655 | 02-04 | 10 | -40 | FI | 41" ROD | NONE | AC COMM | BOB'S FAIRBANKS |

Appendix B
Ambient Noise Measurements Near Tok, Alaska
September - October 1987
2.5 MHz, 10 kHz bandwidth

| Date yyymmdd | Time (ADT) hhmm | Location | Antenna | Preamp | Level (dBuV) | Acf (dB) | Field Intensity (dBuV/m) |
|-----------------|-----------------------|-----------------|----------|--------|-----------------|-------------|--------------------------------|
| 870923 | 1517 | JAN LAKE | 41"ROD | NM17 | -21.0 | 20.0 | -1.0 |
| 870923 | 1633 | JAN LAKE | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870923 | 1939 | JAN LAKE | 41"ROD | NM17 | -21.0 | 20.0 | -1.0 |
| 870923 | 2307 | JAN LAKE | 41"ROD | NM17 | -21.5 | 20.0 | -1.5 |
| 870924 | 0748 | JAN LAKE | 41"ROD | NM17 | -20.5 | 20.0 | -0.5 |
| 870924 | 1303 | JAN LAKE | 41"ROD | NM17 | -20.5 | 20.0 | -0.5 |
| 870925 | 1312 | MOTEL, TOK | 41"ROD | NM17 | -9.5 | 20.0 | 10.5 |
| 870925 | 1338 | MOTEL, TOK | 41"ROD | NM17 | -20.5 | 20.0 | -0.5 |
| 870925 | 1415 | MOTEL, TOK | 41"ROD | NM17 | -15.0 | 20.0 | 5.0 |
| 870926 | 1125 | MOTEL, TOK | 41"ROD | NONE | -20.0 | 32.0 | 12.0 |
| 870926 | 1135 | MOTEL, TOK | 41"ROD | NONE | -20.0 | 32.0 | 12.0 |
| 870927 | 1453 | NW REC SITE | 41"ROD | NONE | -22.5 | 32.0 | 9.5 |
| 870927 | 1617 | NW REC SITE | 20' POLE | NONE | -23.0 | 24.5 | 1.5 |
| 870929 | 0800 | NW REC SITE | 20' POLE | ANZAC | -12.5 | 10.5 | -2.0 |
| 870929 | 0804 | NW REC SITE | 20' POLE | ANZAC | -12.5 | 10.5 | -2.0 |
| 870929 | 0902 | NW REC SITE | 20' POLE | ANZAC | -11.5 | 10.5 | -1.0 |
| 870929 | 1013 | NW REC SITE | 20' POLE | ANZAC | -11.5 | 10.5 | -1.0 |
| 870929 | 1209 | NW REC SITE | 20' POLE | ANZAC | -11.5 | 10.5 | -1.0 |
| 870929 | 1501 | NW REC SITE | 20' POLE | ANZAC | -12.0 | 10.5 | -1.5 |
| 870929 | 2305 | NW REC SITE | 20' POLE | ANZAC | <-10.5 | 10.5 | < 0.0 |
| 870930 | 0001 | NW REC SITE | 20' POLE | ANZAC | -11.5 | 10.5 | -1.0 |
| 870930 | 0103 | NW REC SITE | 20' POLE | ANZAC | -11.5 | 10.5 | -1.0 |
| 871001 | 1209 | NW REC SITE | 20' POLE | NONE | -22.5 | 24.5 | 2.0 |
| 871002 | 0900 | NW REC SITE | 20' POLE | NONE | -23.0 | 24.5 | 1.5 |
| 871002 | 1201 | NW REC SITE | 20' POLE | NONE | -22.5 | 24.5 | 2.0 |
| 871002 | 1332 | NW REC SITE | 20' POLE | NONE | -22.5 | 24.5 | 2.0 |
| 871002 | 1509 | NW REC SITE | 20' POLE | NONE | -22.5 | 24.5 | 2.0 |
| 871003 | 0002 | NW REC SITE | 20' POLE | NONE | -22.0 | 24.5 | 2.5 |
| 871003 | 0113 | NW REC SITE | 20' POLE | NONE | -22.0 | 24.5 | 2.5 |
| 871005 | 0906 | NW REC SITE | 20' POLE | ANZAC | <-11.0 | 10.5 | < -0.5 |
| 871005 | 1422 | PIT NR LORAN ST | 20' POLE | NONE | -22.0 | 24.5 | 2.5 |
| 871006 | 1141 | STATE MICROWAVE | 20' POLE | NONE | -21.5 | 24.5 | 3.0 |
| 871006 | 1548 | BOREALIS & E. D | 20' POLE | NONE | -22.0 | 24.5 | 2.5 |
| 871006 | 1921 | MOTEL, TOK | 20' POLE | NONE | -13.5 | 24.5 | 11.0 |
| 871007 | 1101 | MOTEL, TOK | 20' POLE | NONE | -18.5 | 24.5 | 6.0 |
| 871007 | 1351 | 5TH & RED FOX | 20' POLE | NONE | -22.5 | 24.5 | 2.0 |
| 871007 | 1648 | NW?? & RED FOX | 20' POLE | NONE | -22.0 | 24.5 | 2.5 |
| 871008 | 1153 | PIT NEAR DUMP | 20' POLE | NONE | -22.0 | 24.5 | 2.5 |
| 871008 | 1358 | EAST OF DOT YRD | 20' POLE | NONE | -21.5 | 24.5 | 3.0 |
| 871008 | 1630 | N. OF AIRPORT | 20' POLE | NONE | -25.0 | 24.5 | -0.5 |
| 871009 | 1124 | JAN LAKE | 20' POLE | NONE | -22.5 | 24.5 | 2.0 |
| 871013 | 1545 | BOB'S FAIRBANKS | 41" ROD | NONE | -20.5 | 32.0 | 11.5 |
| 871013 | 1655 | BOB'S FAIRBANKS | 41" ROD | NONE | -18.0 | 32.0 | 14.0 |

Appendix B
Ambient Noise Measurements Near Tok, Alaska
September - October 1987
5.0 MHz, 10 kHz bandwidth

| Date yyymmdd | Time (ADT) hhmm | Location | Antenna | Preamp | Level (dBuV) | Acf (dB) | Field Intensity (dBuV/m) |
|-----------------|-----------------------|-----------------|----------|--------|-----------------|-------------|--------------------------------|
| 870923 | 1607 | JAN LAKE | 41"ROD | NM17 | -19.0 | 20.0 | 1.0 |
| 870923 | 1946 | JAN LAKE | 41"ROD | NM17 | -16.0 | 20.0 | 4.0 |
| 870923 | 2317 | JAN LAKE | 41"ROD | NM17 | -18.0 | 20.0 | 2.0 |
| 870924 | 0352 | JAN LAKE | 41"ROD | NM17 | <-18.0 | 20.0 | < 2.0 |
| 870924 | 0756 | JAN LAKE | 41"ROD | NM17 | <-16.0 | 20.0 | < 4.0 |
| 870924 | 1309 | JAN LAKE | 41"ROD | NM17 | -18.5 | 20.0 | 1.5 |
| 870925 | 1343 | MOTEL, TOK | 41"ROD | NM17 | -18.5 | 20.0 | 1.5 |
| 870925 | 1421 | MOTEL, TOK | 41"ROD | NM17 | -18.0 | 20.0 | 2.0 |
| 870927 | 1621 | NW REC SITE | 20' POLE | NONE | -19.0 | 10.6 | -8.4 |
| 870927 | 17?? | NW REC SITE | 41"ROD | NONE | -19.5 | 30.0 | 10.5 |
| 870929 | 0821 | NW REC SITE | 20' POLE | ANZAC | -10.5 | -3.4 | -13.9 |
| 870929 | 0917 | NW REC SITE | 20' POLE | ANZAC | -10.5 | -3.4 | -13.9 |
| 870929 | 1035 | NW REC SITE | 20' POLE | ANZAC | -10.5 | -3.4 | -13.9 |
| 870929 | 1222 | NW REC SITE | 20' POLE | ANZAC | -10.0 | -3.4 | -13.4 |
| 870929 | 2324 | NW REC SITE | 20' POLE | ANZAC | < -8.5 | -3.4 | <-11.9 |
| 870930 | 0017 | NW REC SITE | 20' POLE | ANZAC | < -9.0 | -3.4 | <-12.4 |
| 870930 | 0119 | NW REC SITE | 20' POLE | ANZAC | -8.5 | -3.4 | -11.9 |
| 871002 | 0912 | NW REC SITE | 20' POLE | NONE | < -8.0 | 10.6 | < 2.6 |
| 871002 | 1215 | NW REC SITE | 20' POLE | NONE | -19.0 | 10.6 | -8.4 |
| 871002 | 1347 | NW REC SITE | 20' POLE | NONE | -20.0 | 10.6 | -9.4 |
| 871002 | 1520 | NW REC SITE | 20' POLE | NONE | -19.0 | 10.6 | -8.4 |
| 871003 | 0031 | NW REC SITE | 20' POLE | NONE | <-18.0 | 10.6 | < -7.4 |
| 871003 | 0126 | NW REC SITE | 20' POLE | NONE | <-16.0 | 10.6 | < -5.4 |
| 871005 | 0922 | NW REC SITE | 20' POLE | NONE | <-18.5 | 10.6 | < -7.9 |
| 871005 | 1439 | PIT NR LORAN ST | 20' POLE | NONE | -20.0 | 10.6 | -9.4 |
| 871006 | 1211 | STATE MICROWAVE | 20' POLE | NONE | -19.0 | 10.6 | -8.4 |
| 871006 | 1603 | BOREALIS & E. D | 20' POLE | NONE | -20.0 | 10.6 | -9.4 |
| 871006 | 1938 | MOTEL, TOK | 20' POLE | NONE | <-14.0 | 10.6 | < -3.4 |
| 871007 | 1120 | MOTEL, TOK | 20' POLE | NONE | -18.0 | 10.6 | -7.4 |
| 871007 | 1403 | 5TH & RED FOX | 20' POLE | NONE | -20.5 | 10.6 | -9.9 |
| 871007 | 1700 | NW?? & RED FOX | 20' POLE | NONE | -19.5 | 10.6 | -8.9 |
| 871008 | 1209 | PIT NEAR DUMP | 20' POLE | NONE | -21.0 | 10.6 | -10.4 |
| 871008 | 1408 | EAST OF DOT YRD | 20' POLE | NONE | -23.0 | 10.6 | -12.4 |
| 871008 | 1644 | N. OF AIRPORT | 20' POLE | NONE | <-21.5 | 10.6 | <-10.9 |
| 871009 | 1137 | JAN LAKE | 20' POLE | NONE | -21.0 | 10.6 | -10.4 |
| 871013 | 1602 | BOB'S FAIRBANKS | 41" ROD | NONE | -18.0 | 30.0 | 12.0 |

Appendix B
Ambient Noise Measurements Near Tok, Alaska
September - October 1987
10.0 MHz, 10 kHz bandwidth

| Date yyymmdd | Time (ADT) hhmm | Location | Antenna | Preamp | Level (dBuV) | Acf (dB) | Field Intensity (dBuV/m) |
|-----------------|-----------------------|-----------------|----------|--------|-----------------|-------------|--------------------------------|
| 870923 | 1616 | JAN LAKE | 41"ROD | NM17 | -16.0 | 20.0 | 4.0 |
| 870923 | 1952 | JAN LAKE | 41"ROD | NM17 | -15.5 | 20.0 | 4.5 |
| 870923 | 2344 | JAN LAKE | 41"ROD | NM17 | <-12.5 | 20.0 | < 7.5 |
| 870924 | 0358 | JAN LAKE | 41"ROD | NM17 | <-18.0 | 20.0 | < 2.0 |
| 870924 | 0809 | JAN LAKE | 41"ROD | NM17 | <-17.5 | 20.0 | < 2.5 |
| 870924 | 13?? | JAN LAKE | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870925 | 1348 | MOTEL, TOK | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870925 | 1426 | MOTEL, TOK | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870925 | 1430 | MOTEL, TOK | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870927 | 1624 | NW REC SITE | 20' POLE | NONE | <-10.5 | -0.5 | <-11.0 |
| 870927 | 17?? | NW REC SITE | 41"ROD | NONE | -22.5 | 24.0 | 1.5 |
| 870929 | 0834 | NW REC SITE | 20' POLE | ANZAC | -9.0 | -14.5 | -23.5 |
| 870929 | 0934 | NW REC SITE | 20' POLE | ANZAC | -11.5 | -14.5 | -26.0 |
| 870929 | 1059 | NW REC SITE | 20' POLE | ANZAC | -11.5 | -14.5 | -26.0 |
| 870929 | 1236 | NW REC SITE | 20' POLE | ANZAC | -10.5 | -14.5 | -25.0 |
| 870929 | 2342 | NW REC SITE | 20' POLE | ANZAC | < -1.0 | -14.5 | <-15.5 |
| 870930 | 0032 | NW REC SITE | 20' POLE | ANZAC | < -2.5 | -14.5 | <-17.0 |
| 870930 | 0141 | NW REC SITE | 20' POLE | ANZAC | < -4.5 | -14.5 | <-19.0 |
| 871002 | 0924 | NW REC SITE | 20' POLE | NONE | <-15.0 | -0.5 | <-15.5 |
| 871002 | 1231 | NW REC SITE | 20' POLE | NONE | <-16.0 | -0.5 | <-16.5 |
| 871002 | 1403 | NW REC SITE | 20' POLE | NONE | <-16.0 | -0.5 | <-16.5 |
| 871002 | 1531 | NW REC SITE | 20' POLE | NONE | <-14.0 | -0.5 | <-14.5 |
| 871003 | 0039 | NW REC SITE | 20' POLE | NONE | <-15.0 | -0.5 | <-15.5 |
| 871003 | 0141 | NW REC SITE | 20' POLE | NONE | <-12.5 | -0.5 | <-13.0 |
| 871005 | 0938 | NW REC SITE | 20' POLE | NONE | <-16.0 | -0.5 | <-16.5 |
| 871005 | 1455 | PIT NR LORAN ST | 20' POLE | NONE | <-13.5 | -0.5 | <-14.0 |
| 871006 | 1238 | STATE MICROWAVE | 20' POLE | NONE | <-17.0 | -0.5 | <-17.5 |
| 871006 | 1624 | BOREALIS & E. D | 20' POLE | NONE | <-20.0 | -0.5 | <-20.5 |
| 871006 | 1957 | MOTEL, TOK | 20' POLE | NONE | < -1.5 | -0.5 | < -2.0 |
| 871007 | 1141 | MOTEL, TOK | 20' POLE | NONE | <-12.0 | -0.5 | <-12.5 |
| 871007 | 1416 | 5TH & RED FOX | 20' POLE | NONE | <-14.0 | -0.5 | <-14.5 |
| 871007 | 1713 | NW?? & RED FOX | 20' POLE | NONE | <-12.0 | -0.5 | <-12.5 |
| 871008 | 1222 | PIT NEAR DUMP | 20' POLE | NONE | <-16.5 | -0.5 | <-17.0 |
| 871008 | 1424 | EAST OF DOT YRD | 20' POLE | NONE | <-20.0 | -0.5 | <-20.5 |
| 871008 | 1736 | N. OF AIRPORT | 20' POLE | NONE | <-16.0 | -0.5 | <-16.5 |
| 871009 | 1150 | JAN LAKE | 20' POLE | NONE | <-18.0 | -0.5 | <-18.5 |
| 871013 | 1613 | BOB'S FAIRBANKS | 41" ROD | NONE | -17.5 | 24.0 | 6.5 |

Appendix B
Ambient Noise Measurements Near Tok, Alaska
September - October 1987
15 MHz, 10 kHz bandwidth

| Date yyymmdd | Time (ADT) hhmm | Location | Antenna | Preamp | Level (dBuV) | Acf (dB) | Field Intensity (dBuV/m) |
|-----------------|-----------------------|-----------------|----------|--------|-----------------|-------------|--------------------------------|
| 870923 | 1616 | JAN LAKE | 41"ROD | NM17 | -17.0 | 20.0 | 3.0 |
| 870923 | 1952 | JAN LAKE | 41"ROD | NM17 | -16.5 | 20.0 | 3.5 |
| 870923 | 2344 | JAN LAKE | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870924 | 0358 | JAN LAKE | 41"ROD | NM17 | <-20.0 | 20.0 | < 0.0 |
| 870924 | 0809 | JAN LAKE | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870924 | 13?? | JAN LAKE | 41"ROD | NM17 | -20.5 | 20.0 | -0.5 |
| 870925 | 1348 | MOTEL, TOK | 41"ROD | NM17 | -20.5 | 20.0 | -0.5 |
| 870925 | 1426 | MOTEL, TOK | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870925 | 1430 | MOTEL, TOK | 41"ROD | NM17 | -20.0 | 20.0 | 0.0 |
| 870927 | 1624 | NW REC SITE | 20' POLE | NONE | <-15.0 | -3.1 | <-18.1 |
| 870927 | 1??? | NW REC SITE | 41"ROD | NONE | -23.0 | 24.0 | 1.0 |
| 870929 | 0834 | NW REC SITE | 20' POLE | ANZAC | -6.5 | -17.1 | -23.6 |
| 870929 | 0934 | NW REC SITE | 20' POLE | ANZAC | -10.0 | -17.1 | -27.1 |
| 870929 | 1059 | NW REC SITE | 20' POLE | ANZAC | -11.5 | -17.1 | -28.6 |
| 870929 | 1236 | NW REC SITE | 20' POLE | ANZAC | -8.5 | -17.1 | -25.6 |
| 870929 | 2342 | NW REC SITE | 20' POLE | ANZAC | < -3.0 | -17.1 | <-20.1 |
| 870930 | 0032 | NW REC SITE | 20' POLE | ANZAC | < -2.5 | -17.1 | <-19.6 |
| 870930 | 0141 | NW REC SITE | 20' POLE | ANZAC | < -3.0 | -17.1 | <-20.1 |
| 871002 | 0924 | NW REC SITE | 20' POLE | NONE | <-15.0 | -3.1 | <-18.1 |
| 871002 | 1231 | NW REC SITE | 20' POLE | NONE | <-15.0 | -3.1 | <-18.1 |
| 871002 | 1403 | NW REC SITE | 20' POLE | NONE | <-14.5 | -3.1 | <-17.6 |
| 871002 | 1531 | NW REC SITE | 20' POLE | NONE | <-14.0 | -3.1 | <-17.1 |
| 871003 | 0039 | NW REC SITE | 20' POLE | NONE | <-15.5 | -3.1 | <-18.6 |
| 871003 | 0141 | NW REC SITE | 20' POLE | NONE | <-14.0 | -3.1 | <-17.1 |
| 871005 | 0938 | NW REC SITE | 20' POLE | NONE | <-15.0 | -3.1 | <-18.1 |
| 871005 | 1455 | PIT NR LORAN ST | 20' POLE | NONE | <-13.0 | -3.1 | <-16.1 |
| 871006 | 1238 | STATE MICROWAVE | 20' POLE | NONE | <-15.0 | -3.1 | <-18.1 |
| 871006 | 1624 | BOREALIS & E. D | 20' POLE | NONE | <-18.5 | -3.1 | <-21.6 |
| 871006 | 1957 | MOTEL, TOK | 20' POLE | NONE | < -9.5 | -3.1 | <-12.6 |
| 871007 | 1141 | MOTEL, TOK | 20' POLE | NONE | <-13.5 | -3.1 | <-16.6 |
| 871007 | 1416 | 5TH & RED FOX | 20' POLE | NONE | <-14.0 | -3.1 | <-17.1 |
| 871007 | 1713 | NW?? & RED FOX | 20' POLE | NONE | <-12.0 | -3.1 | <-15.1 |
| 871008 | 1222 | PIT NEAR DUMP | 20' POLE | NONE | <-16.5 | -3.1 | <-19.6 |
| 871008 | 1424 | EAST OF DOT YRD | 20' POLE | NONE | <-16.0 | -3.1 | <-19.1 |
| 871008 | 1736 | N. OF AIRPORT | 20' POLE | NONE | <-14.5 | -3.1 | <-17.6 |
| 871009 | 1150 | JAN LAKE | 20' POLE | NONE | <-17.5 | -3.1 | <-20.6 |
| 871013 | 1613 | BOB'S FAIRBANKS | 41" ROD | NONE | -17.5 | 24.0 | 6.5 |

Appendix B
Ambient Noise Measurements Near Tok, Alaska
September - October 1987
20.0 MHz, 10 kHz bandwidth

| Date yyymmdd | Time (ADT) hhmm | Location | Antenna | Preamp | Level (dBuV) | Acf (dB) | Field Intensity (dBuV/m) |
|-----------------|-----------------------|-----------------|----------|--------|-----------------|-------------|--------------------------------|
| 870923 | 1622 | JAN LAKE | 41"ROD | NM17 | -18.0 | 20.0 | 2.0 |
| 870923 | 2000 | JAN LAKE | 41"ROD | NM17 | -18.5 | 20.0 | 1.5 |
| 870923 | 2350 | JAN LAKE | 41"ROD | NM17 | -19.5 | 20.0 | 0.5 |
| 870924 | 0816 | JAN LAKE | 41"ROD | NM17 | -18.5 | 20.0 | 1.5 |
| 870924 | 1326 | JAN LAKE | 41"ROD | NM17 | -19.5 | 20.0 | 0.5 |
| 870925 | 1353 | MOTEL, TOK | 41"ROD | NM17 | -19.0 | 20.0 | 1.0 |
| 870925 | 1435 | MOTEL, TOK | 41"ROD | NM17 | -18.0 | 20.0 | 2.0 |
| 870927 | 1502 | NW REC SITE | 41"ROD | NONE | -20.5 | 26.0 | 5.5 |
| 870927 | 1627 | NW REC SITE | 20' POLE | NONE | -17.5 | -2.2 | -19.7 |
| 870929 | 0846 | NW REC SITE | 20' POLE | ANZAC | -9.0 | -16.2 | -25.2 |
| 870929 | 0954 | NW REC SITE | 20' POLE | ANZAC | -10.0 | -16.2 | -26.2 |
| 870929 | 1249 | NW REC SITE | 20' POLE | ANZAC | -9.5 | -16.2 | -25.7 |
| 870930 | 0047 | NW REC SITE | 20' POLE | ANZAC | -7.0 | -16.2 | -23.2 |
| 870930 | 0159 | NW REC SITE | 20' POLE | ANZAC | -8.5 | -16.2 | -24.7 |
| 871002 | 0941 | NW REC SITE | 20' POLE | NONE | -18.0 | -2.2 | -20.2 |
| 871002 | 1249 | NW REC SITE | 20' POLE | NONE | -17.5 | -2.2 | -19.7 |
| 871002 | 1423 | NW REC SITE | 20' POLE | NONE | -18.0 | -2.2 | -20.2 |
| 871002 | 1546 | NW REC SITE | 20' POLE | NONE | -17.0 | -2.2 | -19.2 |
| 871003 | 0055 | NW REC SITE | 20' POLE | NONE | -19.0 | -2.2 | -21.2 |
| 871005 | 0953 | NW REC SITE | 20' POLE | NONE | -18.0 | -2.2 | -20.2 |
| 871005 | 1554 | PIT NR LORAN ST | 20' POLE | NONE | -21.0 | -2.2 | -23.2 |
| 871006 | 1311 | STATE MICROWAVE | 20' POLE | NONE | -18.5 | -2.2 | -20.7 |
| 871006 | 1640 | BOREALIS & E. D | 20' POLE | NONE | -18.0 | -2.2 | -20.2 |
| 871006 | 2021 | MOTEL, TOK | 20' POLE | NONE | -17.0 | -2.2 | -19.2 |
| 871007 | 1204 | MOTEL, TOK | 20' POLE | NONE | -18.0 | -2.2 | -20.2 |
| 871007 | 1434 | 5TH & RED FOX | 20' POLE | NONE | -18.5 | -2.2 | -20.7 |
| 871007 | 1727 | NW?? & RED FOX | 20' POLE | NONE | -17.5 | -2.2 | -19.7 |
| 871008 | 1239 | PIT NEAR DUMP | 20' POLE | NONE | -18.0 | -2.2 | -20.2 |
| 871008 | 1439 | EAST OF DOT YRD | 20' POLE | NONE | -18.5 | -2.2 | -20.7 |
| 871008 | 1750 | N. OF AIRPORT | 20' POLE | NONE | -18.0 | -2.2 | -20.2 |
| 871009 | 1203 | JAN LAKE | 20' POLE | NONE | -20.0 | -2.2 | -22.2 |
| 871013 | 1623 | BOB'S FAIRBANKS | 41" ROD | NONE | -20.0 | 26.0 | 6.0 |